

# how to build 20 boats

14 ft. Bantam Class Sloop • Class A, B and C Hydros  
18 ft. Inboard Utility • 17 ft. Fiberglass Runabout  
24 ft. Sloop • Outboard Cruisers • Novelty Boats

A FAWCETT

75c

HOW-TO BOOK

470



**JETCAT** — 14 ft. Outboard Catamaran

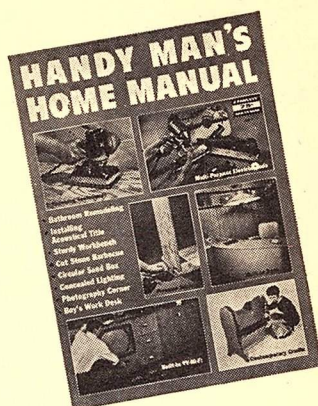
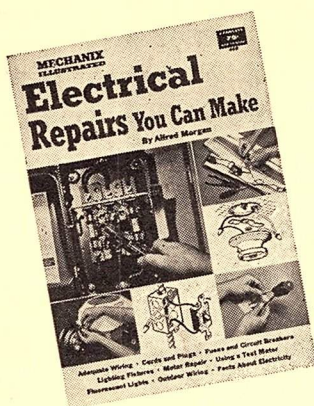
**NUGGET** — 24 ft. Trimaran Sailboat

**CHIPMUNK** — 14 ft. Outboard Cruiser





# FAWCETT HOW-TO BOOKS



**STEREO HI-FI HANDBOOK** • What stereo is, component specifications simplified, tapes, etc. (No. 469)

**MI ELECTRICAL REPAIRS YOU CAN MAKE** • Cords, plugs, wiring, fuses, circuit breakers, fixtures. (No. 468)

**HANDY MAN'S HOME MANUAL** • Finishing techniques, tools, plywood joining, indoor, outdoor projects. (No. 467)

**HOW TO BUILD IT** • Instructions, how-to photos for playground area, furniture, cabin trailer, etc. (No. 466)

**BEST HOT RODS** • Bonneville NHRA roundups, kart engines, compact souping, superchargers. (No. 465)

**ELECTRONIC IDEAS** • Electronic ignition analyzer, grid dip meter, kits, tools, TV tips, equipment. (No. 464)

**How To Be An Expert At SHOTGUN SHOOTING** • Trapshooting, skeet, sighting, body control, etc. (No. 463)

**HI-FI GUIDE** • New stereophonic, monaural components, kits, installations, enclosures, speakers. (No. 462)

**GOOD PHOTOGRAPHY** • Animals, children, glamor, portraits, nudes, water scenes, salon section. (No. 461)

**THE FIRST WAR PLANES** • First fighters, scouts, bombers, WW I aces, combat, U. S. squadrons. (No. 460)

**PLUMBING AND HEATING HANDBOOK** • Tools, techniques, materials, repairs, oil burners, pipes. (No. 459)

**PRIZE WINNING PHOTOGRAPHY** • National winners, portraits, children, nudes, glamor, salon section. (No. 458)

**HANDBOOK OF HOME IMPROVEMENTS** • Kitchens, attic, basement ideas, space-savers, patios. (No. 457)

**GOOD PHOTOGRAPHY'S 35MM HANDBOOK** • Motor cameras, darkroom, exposure meters, salon. (No. 456)

**TOM McCaHILL'S CAR OWNER HANDBOOK** • Buying, testing, sports, foreign cars, repairs, etc. (No. 455)

**AMATEUR ASTRONOMY HANDBOOK** • Build telescopes, observing, photographing the heavens. (No. 454)

**HOME CARPENTRY HANDBOOK** • Workshop, power tools, interior, exterior home construction. (No. 453)

**LEARN TO DRAW FROM FAMOUS ARTISTS** • Michelangelo, Rembrandt, DaVinci, Degas, Goya, etc. (No. 452) Also available in hard cover edition at \$2.50 per copy.

**NEW HOT ROD HANDBOOK** • Newest sports rods, souping, multiple carbs, clutches, go-karts. (No. 451) Also available in hard cover edition at \$2.50 per copy.

**PHOTOGRAPHY HANDBOOK** • 120MM special section, figure lighting, photoliths, photo painting. (No. 450)

**How to Choose and Use POWER TOOLS** • Stationary, portable tools, tool maintenance, shop planning. (No. 449) Also available in hard cover edition at \$2.50 per copy.

**Handy Man's CONCRETE and MASONRY Handbook** • Photos, illustrations, how-to instructions. (No. 448) Also available in hard cover edition at \$2.50 per copy.

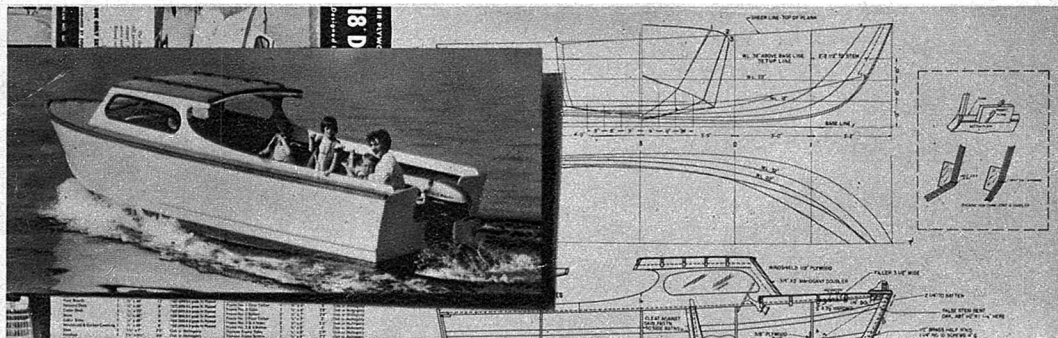
To order direct, send 75c per copy for regular edition or \$2.50 per copy for De Luxe edition to: **FAWCETT BOOKS, Dept. 470, Greenwich, Conn.** Add 10c per copy mailing charge for all books. Specify title and number. Canadian orders cannot be accepted.

**A FAWCETT  
HOW-TO BOOK 75c**

**AT YOUR LOCAL NEWSSTAND, LEADING DRUG STORE, SUPER MARKET, HARDWARE STORE AND BUILDING SUPPLY DEALER**

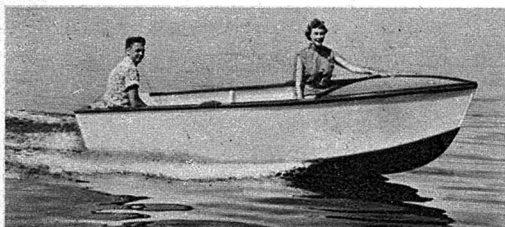


# SAVE MONEY! BUILD YOUR OWN BOAT WITH WELDWOOD ROYAL MARINE PLYWOOD



**Royal Marine Day Cruiser**, an 18-footer designed for all-round family comfort and safety, can take outboards up to 40 hp. With skill and patience, you'll have little trouble building her with big, supple sheets of Royal Marine Plywood.

## Free step-by-step plans at your Weldwood lumber dealer's



**Royal Marine 13 1/2-Foot Outboard** is a trim sportster designed for the amateur builder working on a modest budget. Speeds up to 35 mph with power up to 25 hp.



**Royal Marine 15-Foot Outboard** is an open water boat with storage for two-week cruise. Easy to build with strong, seagoing Weldwood Royal Marine Plywood.



**Royal Marine Pram Dinghy**, a sturdy little 7 1/2-footer, is light enough to haul on your car roof. Plans include instructions on how to convert her for sail.

**YOU SAVE MONEY**—get satisfaction, too—when you build your own boat. Weldwood's new collection of Royal Marine boat plans gives full details in easy-to-follow diagrams and photos, plus complete materials list. For extra economy, there's Weldwood® Royal Marine Fir Plywood; for extra durability and unusual paint-holding qualities, Weldwood Royal Marine Duraply®; for natural wood beauty, Weldwood Royal Marine Philippine Mahogany. All give you years of low-maintenance boating fun. Pick out your boat plans at your Weldwood Royal Marine Plywood lumber dealer's this weekend. Or mail coupon today for your plans.

## WELDWOOD ROYAL MARINE PLYWOOD

DOUGLAS FIR • PHILIPPINE MAHOGANY • DURAPLY

SEND FOR ILLUSTRATED BOAT PLANS

**United States Plywood**

HTBB1-61

55 West 44th Street, New York 36, N. Y.

Please send me plans and/or booklet I have checked below.

☐ Plan #60—Day Cruiser ☐ Plan #40—13 1/2-ft. Outboard  
☐ Plan #50—15-ft. Outboard ☐ Plan #75—Pram Dinghy  
I enclose 10c for each plan ordered.

☐ "Weldwood Royal Marine's Guide For Pleasure Boatmen," Hank Wieand Bowman's new book on how to select the boat that's right for you. FREE.

Name.....

Address.....

City.....Zone.....State.....



# How To BUILD 20 BOATS

A FAWCETT BOOK • NUMBER 470  
LARRY EISINGER • EDITOR-IN-CHIEF  
GEORGE TILTON • MANAGING EDITOR  
SILVIO LEMBO • ART EDITOR

W. H. Fawcett, Jr. . . . . President  
Roger Fawcett . . . . . General Manager  
Donald P. Hanson . . . Assistant General Manager  
Gordon Fawcett . . . . . Secretary-Treasurer  
Roscoe Fawcett . . . . . Circulation Director  
Ralph Daigh . . . . . Editorial Director  
James B. Boynton . . . . Advertising Director  
Al Allard . . . . . Art Director  
Ralph Mattison . . . . . Associate Art Director  
George H. Carl . . . . . Production Director

RAY GILL . . . . . EDITOR  
Susan B. Cole . . . . . Editorial Assistant



## Staff Artists

NICK CARLUCCI . . . . ASSOCIATE ART EDITOR  
Harold E. Price • Michael Gaynor  
Larry Flanagan • Howard Katz  
John S. Selvaggio • Michael deLucia  
Bob Vatter • Bill Miuccio

Phyllis J. Bendremer . . . . . Production Editor  
Benita Rockwood . . . Assistant Production Editor

HOW TO BUILD 20 BOATS, Fawcett Book 470, is published by Fawcett Publications, Inc., Greenwich, Connecticut. Editorial and advertising Offices: 67 West 44th Street, New York 36, New York. General Offices: Fawcett Building, Greenwich, Connecticut. Printed in U.S.A. Copyright 1960 by Fawcett Publications, Inc.

Cover color photos by SIMON NATHAN (of the JET CAT), by ARTHUR PIVER (of the NUGGET), by HANK CLARK (of the CHIPMUNK).

Member of Magazine Publishers Association, Inc.





# How to pass a genius



All of us can't be geniuses. But any ordinarily talented mortal can be a success—and that's more than some geniuses are.

Now, as in Aesop's time, the race doesn't always go to the one who potentially is the swiftest. The *trained* man has no trouble in passing the genius who hasn't improved his talents.

In good times and bad times, in every technical and business field, the *trained* man is worth a dozen untrained ones, no matter how gifted.

The International Correspondence Schools can't make you into a genius. For more than 67 years, however, I. C. S. has been helping its students to become *trained, successful leaders*—and it can do the same for you.

Mark your special interest on the coupon. Don't be like the unsuccessful genius who wastes his life in dreaming of what he intends to do. *Act now!*

For Real Job Security—Get an I. C. S. Diploma! I. C. S., Scranton 15, Penna.

Accredited Member,  
National Home Study Council

## INTERNATIONAL CORRESPONDENCE SCHOOLS



BOX 59076A, SCRANTON 15, PENNA.

(In Hawaii, reply P.O. Box 418, Honolulu)

(Partial list of courses)

Without cost or obligation, send me "HOW TO SUCCEED" and the opportunity booklet about the field BEFORE which I have marked X (plus sample lesson):

### ARCHITECTURE and BUILDING CONSTRUCTION

- ☐ Air Conditioning
- ☐ Architecture
- ☐ Arch. Drawing and Designing
- ☐ Building Contractor
- ☐ Building Estimator
- ☐ Carpenter Builder
- ☐ Carpentry and Millwork
- ☐ Heating
- ☐ Painting Contractor
- ☐ Plumbing
- ☐ Reading Arch. Blueprints

### ART

- ☐ Commercial Art
- ☐ Magazine Illus.
- ☐ Sign Painting and Design'g
- ☐ Sketching and Painting

### AUTOMOTIVE

- ☐ Automobile
- ☐ Auto Body Rebuilding and Refinishing
- ☐ Auto Engine Tuneup
- ☐ Auto Electrical Technician
- ☐ Diesel Engines

### AVIATION

- ☐ Aero-Engineering Technology
- ☐ Aviation Engine Mech.
- ☐ Reading Aircraft Blueprints

### BUSINESS

- ☐ Accounting
- ☐ Advertising
- ☐ Bookkeeping and Cost Accounting
- ☐ Business Administration
- ☐ Business Management
- ☐ Clerk Typist
- ☐ Creative Salesmanship
- ☐ Managing a Small Business
- ☐ Professional Secretary
- ☐ Public Accounting
- ☐ Purchasing Agent
- ☐ Real Estate Salesmanship
- ☐ Salesmanship
- ☐ Salesmanship and Management
- ☐ Traffic Management

### CHEMICAL

- ☐ Analytical Chemistry
- ☐ Chemical Engineering
- ☐ Chem. Lab. Technician
- ☐ General Chemistry

- ☐ Oil Field Technology
- ☐ Pulp and Paper Making

### CIVIL ENGINEERING

- ☐ Civil Engineering
- ☐ Construction Engineering
- ☐ Highway Engineering
- ☐ Professional Engineer (Civil)
- ☐ Reading Struc. Blueprints
- ☐ Sanitary Engineer
- ☐ Sewage Plant Operator
- ☐ Structural Engineering
- ☐ Surveying and Mapping
- ☐ Water Works Operator

### DRAFTING

- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Drafting & Machine Design
- ☐ Electrical Drafting
- ☐ Electrical Engineer Drafting
- ☐ Industrial Piping Drafting
- ☐ Mechanical Drafting
- ☐ Sheet Metal Drafting

### ELECTRICAL

- ☐ Electrical Appliance Servicing
- ☐ Electrical Engineering

- ☐ Electric Motor Repairman
- ☐ Elec. Engr. Technician
- ☐ Elec. Light and Power
- ☐ Practical Electrician
- ☐ Practical Lineman
- ☐ Professional Engineer

### HIGH SCHOOL

- ☐ Good English
- ☐ High School Diploma
- ☐ High School General
- ☐ H. S. College Prep. (Eng'r'g & Science)
- ☐ High School Math
- ☐ High School Science
- ☐ Short Story Writing

### LEADERSHIP

- ☐ Industrial Foremanship
- ☐ Industrial Supervision
- ☐ Personnel-Labor Relations
- ☐ Supervision

### MECHANICAL and SHOP

- ☐ Diesel Engines
- ☐ Gas-Elec. Welding
- ☐ Heating and Air Conditioning
- ☐ Industrial Engineering
- ☐ Industrial Instrumentation

- ☐ Industrial Safety
- ☐ Machine Shop Practice
- ☐ Mechanical Engineering
- ☐ Plumbing and Heating
- ☐ Professional Engineer
- ☐ Quality Control
- ☐ Reading Shop Blueprints
- ☐ Refrigeration and Air Conditioning
- ☐ Tool Design
- ☐ Tool Making
- ☐ RADIO, TELEVISION
- ☐ General Electronics Tech.
- ☐ Industrial Electronics
- ☐ Practical Radio-TV Eng'r'g
- ☐ Radio-TV Servicing
- ☐ TV Technician

### RAILROAD

- ☐ General Railroad

### STEAM and DIESEL POWER

- ☐ Combustion Engineering
- ☐ Power Plant Engineer
- ☐ Stationary Diesel Engr.
- ☐ Stationary Steam Engines

### TEXTILE

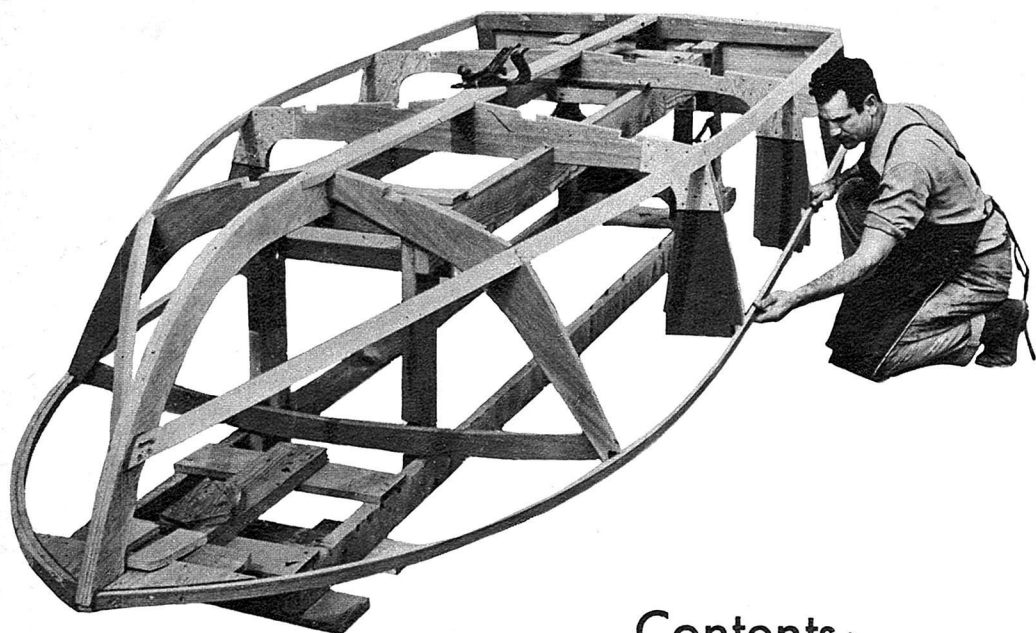
- ☐ General

Name \_\_\_\_\_ Age \_\_\_\_\_ Home Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_ Working Hours \_\_\_\_\_ A.M. to P.M. \_\_\_\_\_

Occupation \_\_\_\_\_ Canadian residents send coupon to International Correspondence Schools, Canadian, Ltd., Montreal, Canada. . . . Special low monthly tuition rates to members of the U. S. Armed Forces.





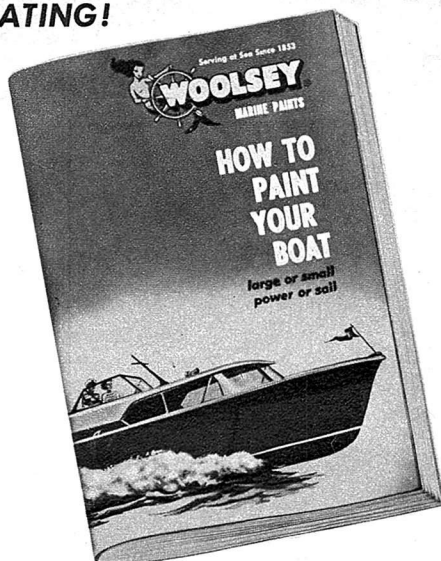
## Contents:

<i>CHIPMUNK . . . . .</i>	<i>6</i>	<i>MALAHINI . . . . .</i>	<i>74</i>
<i>JET CAT . . . . .</i>	<i>16</i>	<i>LAZYBONES . . . . .</i>	<i>82</i>
<i>SIDEWINDER . . . . .</i>	<i>24</i>	<i>JUPITER . . . . .</i>	<i>88</i>
<i>WETBACK . . . . .</i>	<i>28</i>	<i>PEEPER . . . . .</i>	<i>96</i>
<i>HUSTLER . . . . .</i>	<i>36</i>	<i>FROSTFISH . . . . .</i>	<i>98</i>
<i>NUGGET . . . . .</i>	<i>42</i>	<i>L. DORADO . . . . .</i>	<i>106</i>
<i>SKIMABOUT . . . . .</i>	<i>48</i>	<i>MIST MISS . . . . .</i>	<i>112</i>
<i>HALCYON . . . . .</i>	<i>56</i>	<i>PAKEDO . . . . .</i>	<i>120</i>
<i>FOO-LING . . . . .</i>	<i>62</i>	<i>BANTAM . . . . .</i>	<i>126</i>
<i>PEANUT . . . . .</i>	<i>70</i>	<i>WANDERER . . . . .</i>	<i>134</i>



**THE BOOK THAT HAS SHOWN THOUSANDS OF BOAT OWNERS  
THE WAY TO MORE CAREFREE BOATING!**

# LATEST EDITION READY NOW



**It's EASIER to paint your boat  
the RIGHT WAY—when you know how!**

Boat owners everywhere achieve beautiful, professional-looking paint jobs using Woolsey marine coatings plus guidance from this amazing book. It contains up-to-the-minute information on complete surface preparation and the finishing of all types of construction . . . including fiber-glass. Here is a treasury of time-saving hints and step-by-step procedures reflecting the vast experience gained by Woolsey during a century of leadership in the marine paint field.

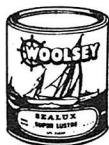
You'll find answers to all your paint questions and problems in the fact-packed, 40-page Woolsey "HOW TO PAINT YOUR BOAT" Book. For example:

- Correct finishing of fiber-glass and aluminum • How to fill seams and cracks • When to use a primer, sealer or undercoat
- How to choose the right bottom paint • How to paint canvas and metal fittings • How to estimate the amount of paint or varnish needed for spars, topsides, decks and other surfaces • When and how to use a spray gun • The basic principles of color styling.

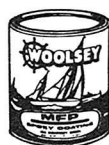
## USE THESE REVOLUTIONARY NEW WOOLSEY PRODUCTS



**"RES-N-GLAS"**  
Fiber-Glassing System



**SEALUX**  
Super Lustre  
Brightwork Finish



**"MFP"**  
Super Tough Epoxy Coating

Gives any wood boat a laminated fiber-glass sheath—watertight, good looking! Excellent for leakproofing bottoms. Reduces maintenance. An old hull rejuvenated with "Res-N-Glas" materials will have far longer life and increased resale value. Resin available in both epoxy and polyester types.

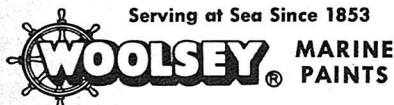
High co-polymer polyurethane resins provide lustre and depth of finish never before achieved in any clear marine coating. Agate hard, it defies water, weather, sun and rough use. Full-year protection ends mid-season "touch-up", preserves during layup.

Catalyzed pure epoxy finish, proved for its dependable protection and high gloss beauty on today's popular hulls—aluminum, steel, all types of molded and panel plywood . . . and especially fiber-glass! Solves surface and color maintenance problems . . . has extraordinary adhesion and abuse-resistance. Eight colors, plus black and white.

## SEE THESE AND OTHER FAMOUS WOOLSEY PRODUCTS AT YOUR WOOLSEY DEALER

Mail coupon with 25c for "How To Paint Your Boat" and check any free literature wanted.

(All literature also available at dealers. Visit yours soon!)



**C. A. WOOLSEY PAINT & COLOR CO. INC.**  
205 East 42nd Street, New York 17, N. Y.



C. A. Woolsey Paint & Color Co. Inc., Dept. 20  
205 E. 42nd Street, New York 17, N. Y.

Please send me your "How To Paint Your Boat" booklet. I enclose 25c in coin to cover all costs. Also send free literature as checked:

☐ Res-N-Glas ☐ Sealux ☐ MFP

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

☐ Check here if you want to know where Woolsey Paints are sold in your area.



How To  
BUILD  
**20**  
BOATS

# CHIPMUNK

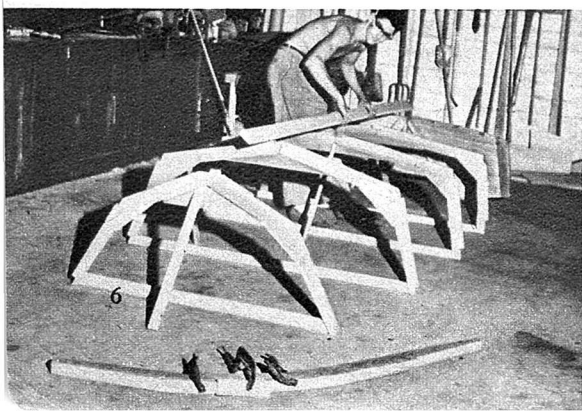
By Henry Clark

Any home handy man can build this beauty.

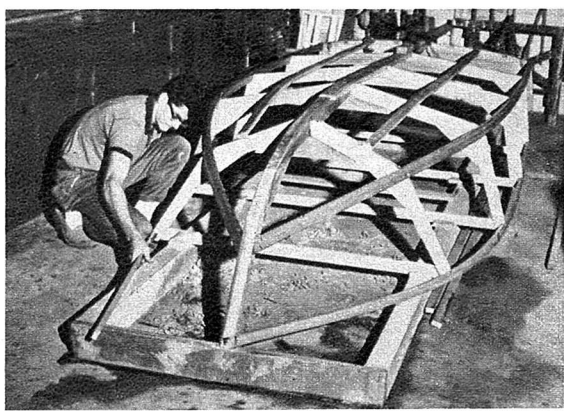


**FAMILY-DESIGNED** 14-ft. outboard cruiser has roomy 5½-ft. beam for safety and comfort.

**SET UP FRAMES** on flat floor before putting them in jig to test height of frames.



**CHINE AND SHEER** rails are bent onto the frames after attaching them to strong jig.



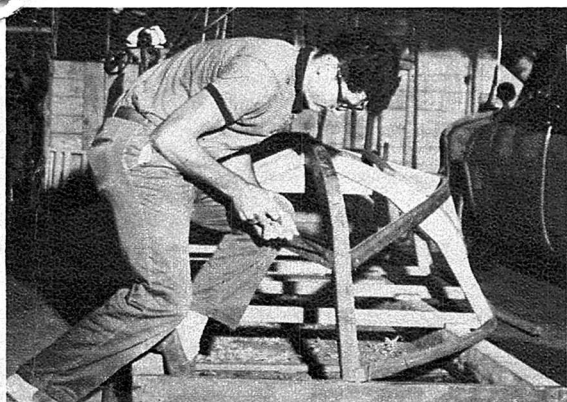


**T**HE 16-FT. BARNABY, last year's cover cruiser, was the answer to many hundreds of home builders whose families have lived on and roamed over the waterways, and water skied like mad at the urge. But herewith we are going to create another bunch of builders who will not only go faster on the water, trail faster on the road, build faster, at less cost, get a stronger hull, but will be able to camp aboard under a shelter. We refer, of course, to the 14-ft. Chipmunk, so named because it can dart about so quickly. The average handy man, for a few weeks effort, will gain a very fast hull with a safe 5-ft. 6-in. beam, many unusual construction features, and lay out a modest \$175.00 more or less, for the pleasure. Out on the water you'll sport lines that will be as stylish as the rest.

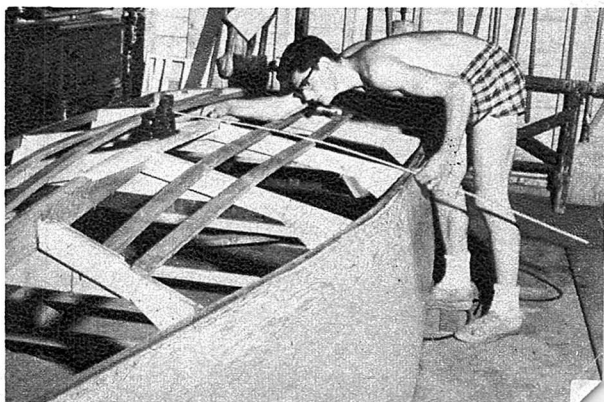
A 17-year-old boy and his father built the test model from my pencil roughs working so fast I could hardly keep up with figures. If the cuddly shelter isn't a must with you leave it off and have an open run-about. You save only 5 bucks. As to power, we didn't mess around. We gave the transom what it can take. With the 40 hp Lark on, the caperer really lives, while pulling two skiers pell mell. With two in, you can clock 30 mph, and still get a soft ride with the semiround bottom. With an 18 hp Fastwin on, the camper still cuts the water at 22 mph, more or less by load, and gets one skier up. The hull is  $\frac{3}{8}$ -in. plywood, the strongest planking you can use for this short size. To start this hull, buy all the materials for the ribs, cut them to size, lay out on the rib drawings, and assemble the pieces with  $\frac{1}{4}$ -in. ply gussets, and oak floor gussets. Lay out the transom on  $\frac{3}{4}$ -in. plywood and edge it with oak framers, notching as needed. Diagonal braces go on later, when right side up. From 2x4 oak, shape the stem and forefoot, easy job for a band saw, or many passes on table saw. Bolt units together.

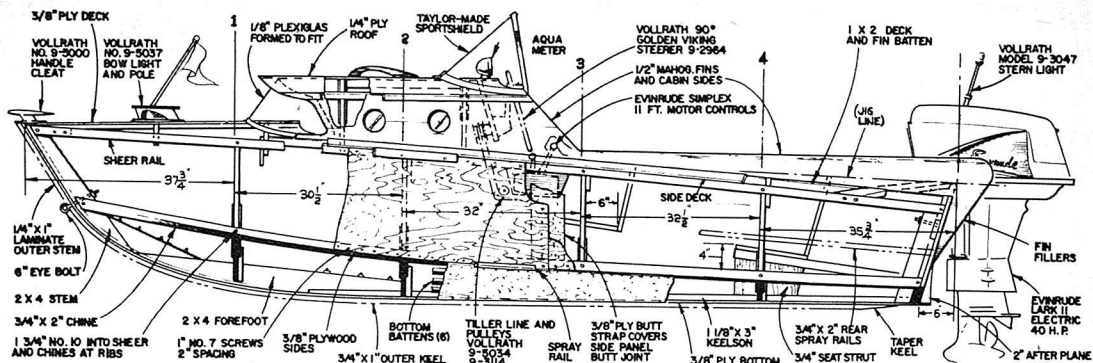
To support the ribs on jig, screw a 1x2-in. tie strip across rib tops. Make these sturdy to resist all work stresses. The jig is simply two lengths of 2x4-in. lumber, laid edge-wise on the garage floor. Set up Rib 1, and lay stem into rib notch, and anchor unit to jig with small screw blocks, and the stem with a small strap iron to front crosspiece. Get this job square. Clamp the keelson into the forefoot notch, stand the transom at the rear, tilted to its angle, and put keelson into its notch. Drill and place two screws into transom notch. Now stand the other three ribs on the jig, under the keelson, space correctly, square to keelson, and proceed to drill for and place all screws holding ribs to keelson. Countersink about  $\frac{1}{4}$  in. to clear beveling job later. Chines go on now, starting at the transom, and bending both at same time to equal stresses, laying into rib notches, and driving screws as you go. Cut chine end to bevel before laying to stem cheek and securing, about  $\frac{1}{2}$  in. back from front, to allow a bevel on stem. Getting the chine to stem takes some pushing, so check the grain of the mahogany to be sure it runs in the bend favor. A good idea is to previously plane a bevel on the lower inside edge of chine, which relieves the bend. Now bend on the sheer rails, starting this time at the breast hook. This imparts a fine bow curve as the sheers are bent to the rear. Place in all notches and screw on as before. Now comes the exacting job of beveling the entire framework for good lay-on of plywood. Before starting, lay the center bottom batten in place on top the ribs, not notched into them. Herein is the secret of getting a semiround bottom, desirable for its nonpound quality, onto a boat with straight rib frames. No complicated curve plots needed. Plywood simply bends across the raised batten on its way from keelson to chine, or its deadrise. The other two battens per side are notched

**KNEE PRESSURE** keeps chine in place while screwing to stem. Also use rope or wire.



**FAIRING FRAME** for flat "lay" of plywood bottom section is done by bending stick.





only part way into the rib frame, the depth dictated by the curve taken by the fairing stick over the center batten after beveling surfaces. Check at each rib. For now, bevel the chine bottom, the keelson, the stem and the transom, checking with the stick. You must get a good flat for the plywood on all contact surfaces. Fairing for the side panels should already exist, needing little planing, but check anyway, and cut out the side panels from the full sheets. Sides go on in two sections. Front section goes on first by clamping in place, looking for good coverage, and favoring the chines. Drill for 1-in. No. 7 screws every 2 in. along chine, 1½ in. along stem, and leave sheer until uprighting. Set six pilot screws into place as positioners. Remove them, the panel, and swab Weldwood resin glue along the areas drilled, replace the panel with the pilot screws, then proceed to drive in all others flush with the surface. Don't countersink, as this needs fillers. Remember that the forward chine width is covered only halfway, so bottom ply can butt side over this area. Add rear side section in same way. Later inside you can apply the butt strap, glueing generously, and screwing shut. Repeat for other side now before going on to bottom.

Now plane off the rough edges of the side plywood along the chines, using stick to get same bevel as already on chine. Now add the other bottom battens into notches already cut to determined depth. Finally check with fairing stick over these to positively assure good layment of the bottom panels and correct any dips or rises. Full size rib drawings are the guide for arranging battens precisely. Send a screw into each rib through all battens, using glue. Bottom panels are now cut, laid over the frame, clamped to keelson center line, and some pilot screws are driven into chine and keelson. Work front end down stem

bend, using water to help wilt ply if a hard fir. This bottom has very slow bend to stem so it should go down easily. When down, run in a pilot screw at tip, and proceed to drill for 1-in. No. 7 screws every 2 in. along keelson, chine, 1½ in. along stem, 1½ in. in two staggered rows along transom, and every 5 in. along bottom battens. Remove panel, swab Weldwood resin, in a creamy mix, along all drilled areas. For a tight seal, apply narrow ½-in. wide strips of linen along chine outside the screw holes and along transom. Swab more glue over these, then place the bottom panel, with the pilot screws, lining up all holes. To help drive the front ones, tilt the rear up, and drive front screws. Now lower the rear, and continue. Fifteen minutes should see one panel all secured using spiral driver. Do not use glue in a cold garage that drops below some 50 degrees. Repeat for other bottom panel. When dry, plane away excess to a smooth joint along chine, and apply the spray rail from stem back to Rib 3, after shaping. Add the outer keel, planing a flat for it along keel, along with the laminated ¼-in. strips that form the front stem. You could flip the hull now but it would be very wise and labor saving if you first Firzite coat the bottom and paint to your choice of color with exterior enamel, or marine paint. This saves working under it when finished. After this you can turn the hull over, remove all the rib ties except on Rib 2 which helps keep beam spread until you can put in the deck dash. This is positioned now and secured. At the transom you can cut, notch, and bolt on the two diagonal braces, forming the V which takes the motor's push and torque. Corner knees are now cut and shaped, joined with two long 3-in. No. 10 screws into V braces and sheer rail. Be sure hull is supported squarely before securing the corner knees. This bracing



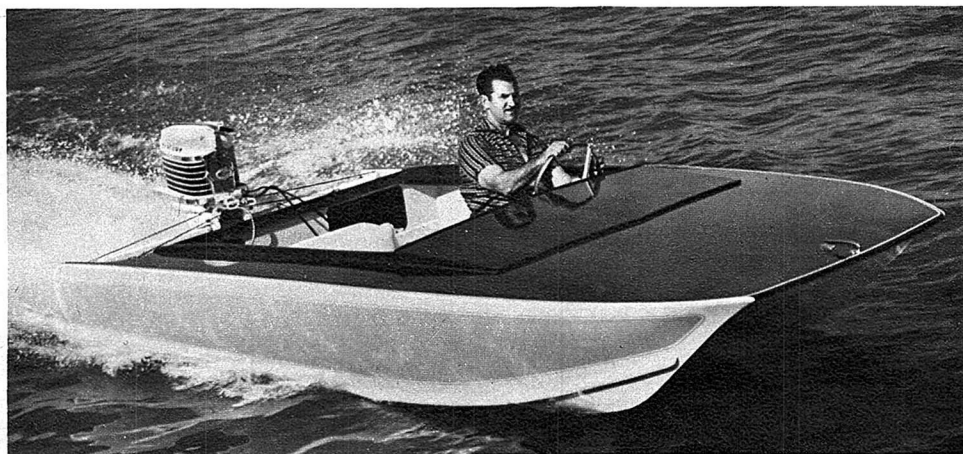
**Build the "JET CAT", "MIST MISS", "L. DORADO"  
and "MALAHINI" featured in this book . . . from**

**FULL SIZE PATTERNS**



**LARGE SCALE PLANS**

**FRAME KITS**



**OVER 40 OTHER BUILD-IT-YOURSELF BOATS AVAILABLE!**

Send for the complete new 80 page "Glen L" Catalog illustrating over 40 modern Build-it-yourself power boats in lengths from 7' to 28'. The large selection of inboards and outboards, catamarans, dragsters, runabouts, ski-boats and all others are designed by a naval architect.

"GLEN L" Large scale PLANS, FRAME KITS and full-size PATTERNS are specially prepared for amateur builders and most include actual step-by-step construction photos and instructions.

**SEND FOR YOUR CATALOG NOW! . . . ONLY 50¢**

**"INBOARD MOTOR INSTALLATIONS IN SMALL BOATS"**

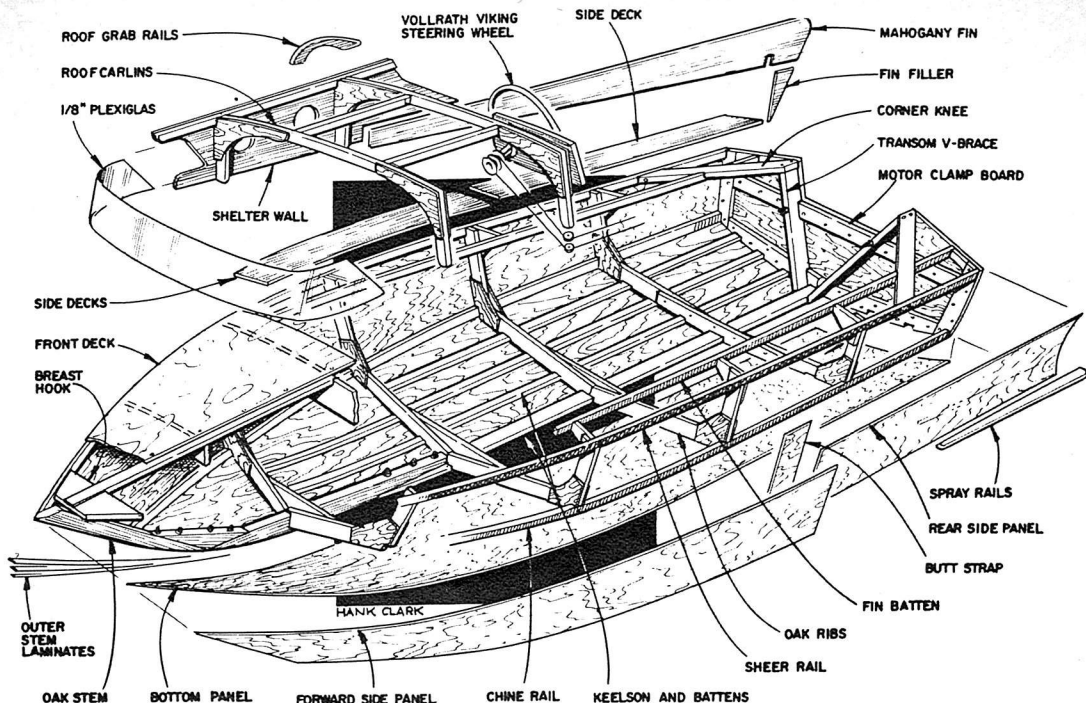
A specialized hard cover book with over 125 photos and illustrations on the "How To" of inboard motor installations . . . **ONLY \$6 ppd.**

**Build the "JET CAT" as shown on the cover.**

**PLAN SET:** A complete set of Large Scale PLANS with step-by-step photos and instructions "plus" Full-Size PATTERNS of the stems, bow member, transom knees and half sections of each of the frames and transom . . . **\$20.00 ppd.**

**FRAME KIT:** A complete ready to assemble KIT of the stems, frames, transom and bow member "plus" a complete PLAN SET as described above . . . **\$120.00 fob.** (Shipping costs can be collected COD. Crated shipping weight approximately 110 lbs.)

**GLEN L—Dept. 20, 9152 Rosecrans, Bellflower, California**



system is exclusive with Chipmunk, and clears the floor of the usual hard-to-install keel knee. Two long  $\frac{3}{8}$ -in. carriage bolts secure V braces to motor clamp. These transmit all the forces to entire frame. Next comes the fin battens, which also support the side decks, running from deck dash back to transom, notching under knee. Provide mount brackets for this rail at Ribs 2, 3 and 4. Rail is planed to angle of sheer rail, so side decks slant outward. Now add front and side decks. Front deck is the  $\frac{3}{8}$ -in. ply remnant, and is either joined over the center kingplank, or rabbeted into the edges of a wide kingplank for good looks. Side decks of  $\frac{1}{2}$ -in. mahogany go on in four parts using glue and screws. Decide now if you want the roof shelter, because this is the next step as you must put up the side walls of  $\frac{1}{2}$ -in. mahogany, light grade. Otherwise add the fins, windshield, and seats for an open runabout. In this event, front seat should go just short of mid point for best speed. With the cabin on you sit just behind the mid point, keeping the nose up, with less wet area. You can sit or stand at this position, an advantage when moving in close spots, or in testy water. If the bottom paint is on, go out and test hull on the water, to help decide. The shelter is no hindrance, as you see well over it. It lends nothing to weight, nor top heaviness.

If the shelter is going on, blank the side

walls to shape from the mahogany, cut the portholes, and glue  $\frac{3}{4}$ -in. stock cleats along the top edge. Before applying walls, plane the fin batten inner face to permit the walls to tilt inboard about  $\frac{1}{2}$  in. Cut the roof beams or carlins, and place them between wall tops, adding the  $\frac{1}{4}$ -in. plywood gussets for bracing. Add the two grab rail beams between carlins, and you are ready for the top (this is  $\frac{1}{4}$ -in. plywood, cut to shape for visor overhang in front, and recess at back for cockpit). Check out the contact surfaces with bent fairing stick before laying down the top with glue, and screws. Blank out and add the gunwale fins now, joining to shelter walls cleanly as possible. Be sure to plane the face of the fin batten to get the fins standing vertical. Then apply glue and screw every 8 in. to battens, filling in down back of transom. The  $\frac{1}{8}$ -in. plexiglas shelter glass is blanked out, and formed with heat from a photoflood bulb to curve into the shelter front, where it screws to insides. On the roof top goes the Taylor 52" Sportsshield, giving your little 14-footer a cruiser look with flying bridge.

Now install the Vollrath Golden Viking steerer onto a  $\frac{3}{4}$ -in. mahogany panel which screws under the roof, and to side walls. Bore for drum and install. Run the cables down the left side where you sit, with pulleys leading back to Evinrude clip. Skipper's seat should fold away for



frustrated?.....  
used them all



**AND NO RESULTS!**

*Why Experiment?* Use a Kuhls Product For  
The Results You Want . . .

**TO MAKE and KEEP BOATS WATERTIGHT**



Completely Revolutionary ... We Don't Just Mean New ...

## EPOTEX Repair Kit—Elastic EPOXY

for surfacing dents, gouges, etc.

### SEALS—REPAIRS—REBUILDS

A permanent bond, a permanent repair on Fiberglass, Wood, Aluminum, Iron, Steel, Plastics, etc. Unaffected by salt or fresh water, oils, grease, turpentine, alcohol, etc. Highly resistant to acids and alkalis. No fiberglass cloth needed. It can be Machined—Sanded—Tooled—Threaded, etc. Colors: White, Grey. White can be tinted with Polyester Fiberglass Colors.



## SEALTITE

OIL RESISTANT

### A RUBBER BASE LIQUID SEALER • FOR BOATS •

Flows into hard-to-get-at small open seams. Expands and contracts for an absolute watertight seal. Easy squeeze applicator bottle. 4 Colors: White, Black, Mahogany, Natural.

ator bottle. 4 Colors: White, Black, Mahogany, Natural.

## RUB-R-SEAM

THIOLKOL BASE  
2 PARTS  
MIXTURE

For deck and hull seams above and below the waterline. Bedding of the laps in lap strike boat construction, etc. Sets up to tough resilient rubber with terrific strength.



## KUHLS Miracle REMOVER TECSTRIP (NON-FLAMMABLE)

Kuhls Tecstrip remover is today's miracle of modern chemistry. Tecstrip removes paints, varnishes, lacquer, shellac, Vinyl Epoxy, Urethane or any synthetic coating from wood, metal, leather, canvas. Tecstrip will not harm any surface or raise the grain of wood. A little goes a long way and its speedy action saves time and reduces labor costs. It cleanses thoroughly leaving a ready surface for re-painting or spraying, fiberglassing.

### KUHLS FULL LINE

Seam Composition No. 1 for Decks No. 2 for Hulls

- Canvas Preservative
- Seamlast
- Bedlast
- Seam Paint
- Canvas Cement
- "Avio" Aer-O-Nautic Liquid Marine Glue
- Trowelast
- 3-Way Preservative
- Brushlast
- Patchlast
- Double Plank Cement
- Sealtite
- Woodtex (Wood Plastic)
- Woodtex (Surfacer)
- Rub-R-Tex
- Rub-R-Seam
- Epotex

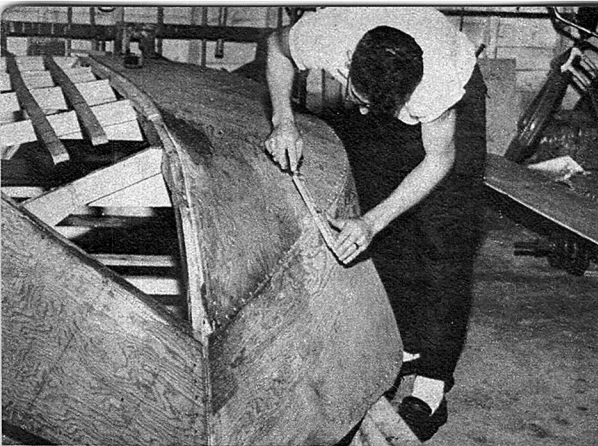
## FREE BOOKLET

AT YOUR DEALER  
OR WRITE DIRECT

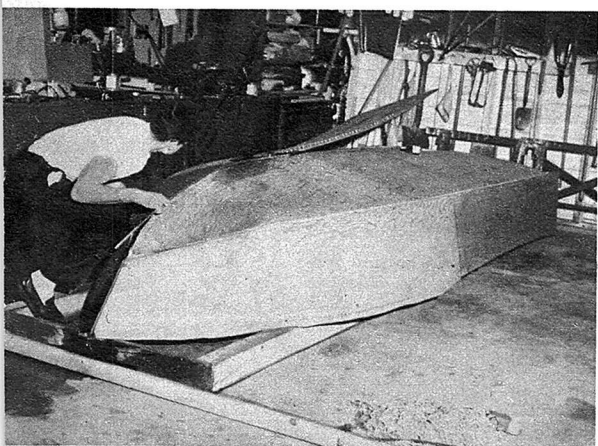
Get this valuable booklet today, describing our Great Elastic Products. Each tested and proven to do a specific job right. It also contains our 11 x 17 Copyrighted Composite Boat Chart, showing a cross section diagram with indications where Kuhls products are most beneficial in keeping boat watertight and trim.

ELASTIC

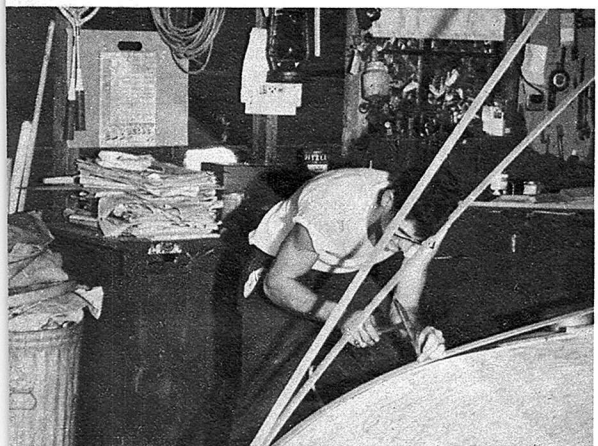
WORLD'S LARGEST MANUFACTURERS OF ELASTIC SEAM COMPOSITIONS—GLUES—CEMENTS—PRESERVATIVES  
SINCE 1869 H.B. FRED KUHLS 65th Street and 3rd Avenue  
Brooklyn 20, New York



**FILE CHINE** smooth for application of spray rails which go on as the next step.



**REAR** of glued bottom panel raised here (above) to allow easier attachment of front.



**OUTER KEEL**, stem go on next. Laminated strips make bending easy. Glue and nail.

## BILL OF MATERIALS

### WHITE OAK

- Stem, Forefoot—1 piece 2"x4"x8'
- Keelson, braces—1 piece 1 1/8"x3"x20'
- Ribs, transom—1 piece 3/4"x3"x8'
- Gussets—1 piece 3/4"x4 1/2"x7'
- Breasthook—1 piece 3/4"x4 3/4"x7'
- Gusset—1 piece 3/4"x6 1/2"x17"

### PHILIPPINE MAHOGANY

- Assorted ribs, chines etc.—1 piece 3/4"x10"x15'
- Battens—1 piece 3/4"x7"x11'
- Wheel board—1 piece 3/4"x9"x16"
- King plank—1 piece 3/4"x5"x4'
- Aft spray rails—1 piece 3/4"x2"x8'
- Fin battens—2 pieces 3/4"x1 1/2"x12'
- Spray rails—2 pieces 1"x1"x12'
- Gunwale edging—2 pieces 1/2"x1 1/2"x15'
- Cabin walls—1 piece 1/2"x12"x9'
- Fins—1 piece 1/2"x10"x10'
- Decks—1 piece 1/2"x8"x18'

### FIR

- Seats back—1 piece 3/4"x12"x12'
- Deck rib—1 piece 3/4"x4"x40'

### MARINE PLYWOOD

- Transom—1 piece 3/4"x24"x5'
- Planking—2 pieces 3/8"x4"x16'
- Roof-gusset flooring—2 pieces 1/4"x4"x8'

### FASTENINGS

- 3/4" galvanized brads—2 lbs. (for gussets)
- 1 1/4" #8 screws—3 dozen (for floor gussets)
- 1/4"x4" carriage bolts—7
- 3/8"x4 1/2" carriage bolts—2 (for V-Brace)
- 1 3/4" #10 screws—4 dozen
- 1 1/2" #8 screws—4 dozen
- 1" #7 screws—4 gross
- Weldwood resin glue—5 lbs.

## LARGE SCALE PLANS

with full size half ribs are available for building this boat at \$8.00 per set. Send orders to Henry Clark, 36 Highwood Dr., Dumont, N. J. Specify FB-CHIPMUNK.



# Build a Boat at $\frac{1}{4}$ the Cost

by using CLEVELAND'S  
Full Size, Cut-to-Shape

## BOAT PATTERNS

Fully-Detailed Blueprints and  
Complete Specifications

**T**HOUSANDS of letters and photos from both experienced and inexperienced boat builders attest to the splendid results so easily obtained with CLEVELAND'S simplified boat building methods. At big savings, too! Illustrations here show only a few of the many

### Wide Selections

available—all designed by Naval Architects. Whether you're interested in catamarans, cruisers, runabouts, sloops, outboard boats, sailing, skiffs, racing or other models—in lengths from 7½ to 38 feet—send today for new

### 88-page Catalog

with illustrations and complete details of all models. Enclose 50c (coin) to cover handling and postage.

Profusely illustrated Instruction Booklet for Amateur Boatbuilders

#### "HOW TO BUILD A BOAT"

Everything from laying keel to final painting, and "Build a Boat" Catalog — both sent postpaid on receipt of

**\$3**

### Order Today—Use Coupon !

CLEVELAND BOAT BLUEPRINT CO.  
Dept. HTB 61, Box 1651, Cleveland, Ohio

- ( ) Enclosed is 50¢ (coin) for your "Build a Boat" Catalog.
- ( ) Enclosed is \$3.00 for your Booklet "How to Build a Boat" and "Build a Boat" Catalog.
- ( ) Enclosed is \$2.00 for 254-pg. "Hardware & Equipment" Catalog.

Print—NAME .....

ADDRESS .....



30 ft.  
Cabin Cruiser



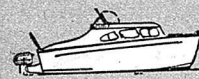
38 ft. Deck House  
Power Cruiser



24 ft.  
Cabin Cruiser



22 ft. Plywood  
Outboard Cruiser



18 ft. Plywood  
Outboard Cruiser



2-Passenger  
Racing Hydroplane



20 ft.  
Fast Runabout



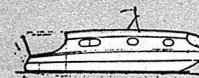
17 ft. 9½ in.  
Vee Drive Runabout



14 ft. 4 in. Plywood  
Outboard Runabout



20 ft.  
Cruising Sloop



30 ft. Outboard  
Powered Houseboat



32 ft. Deck House  
Cabin Cruiser



28 ft. 10 in.  
Cabin Cruiser



22 ft. Inboard Aluminum  
Cabin Cruiser



16 ft. 9 in. Plywood  
Inboard Runabout



16 ft. Plywood  
Outboard Cruiser



14 ft. and 16 ft.  
Lapstrake Skiff



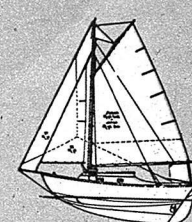
14 ft. and 16 ft.  
Outboard Boat



14½ ft. Outboard  
Utility Boat



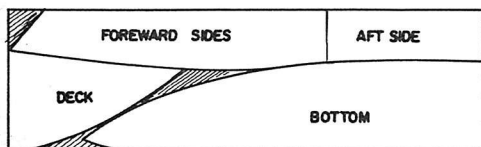
12 ft. 6 in. Plywood  
Outboard Runabout



28 ft. Auxiliary Cutter



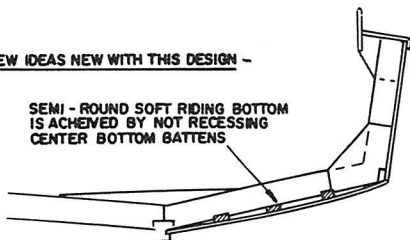
12 ft. Utility  
Outboard Boat



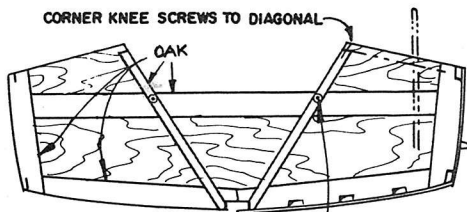
3/8 X 4' X 16' FT. MARINE PLYWOOD YIELDS MAJOR PANELS (2)

**A FEW IDEAS NEW WITH THIS DESIGN -**

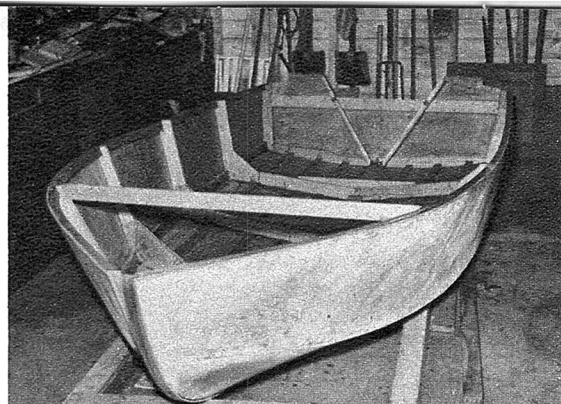
SEMI-ROUND SOFT RIDING BOTTOM  
IS ACHIEVED BY NOT RECESSING  
CENTER BOTTOM BATTENS



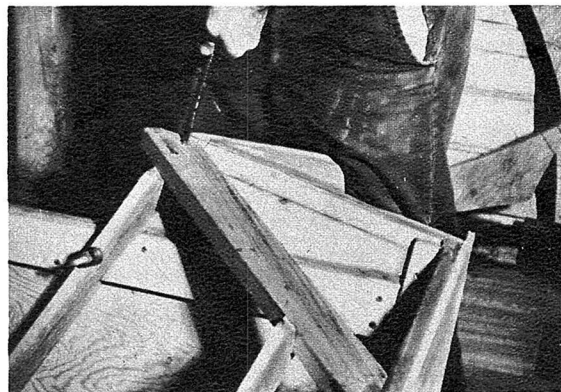
CORNER KNEE SCREWS TO DIAGONAL



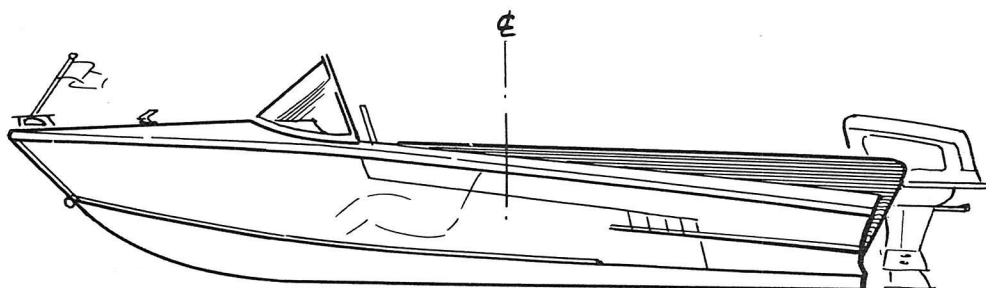
V BRACING BOLTS TO MOTOR BOARD TAKING ITS LOADS



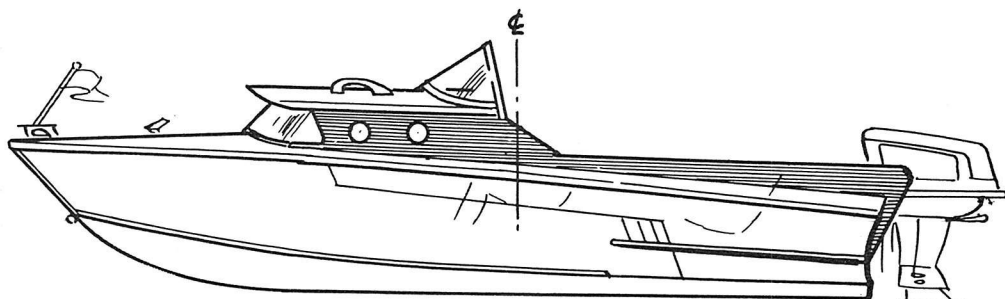
UPRIGHT HULL shows wide beam, roomy interior. One spreader remains temporarily.



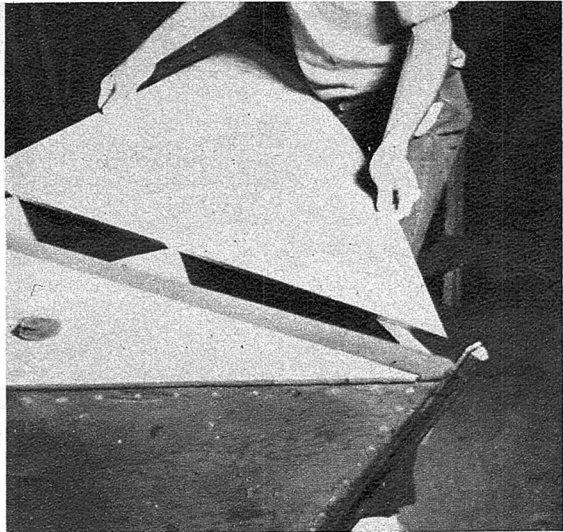
REAR CORNER knee is screwed into the V brace on transom for more rigid bracing.



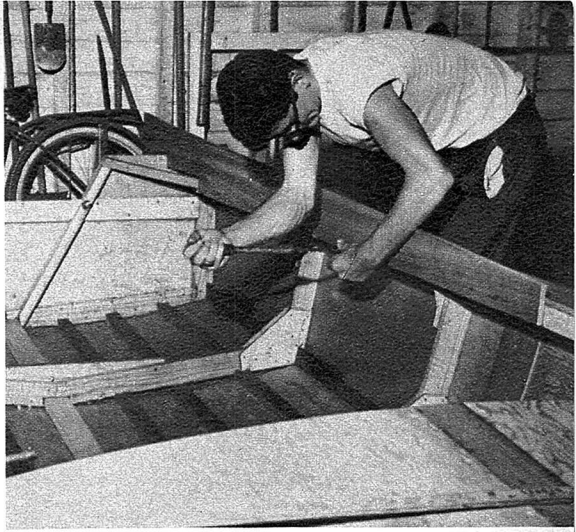
**HULL CAN STOP AT DECK WORK IF OPEN RUNABOUT IS WANTED**



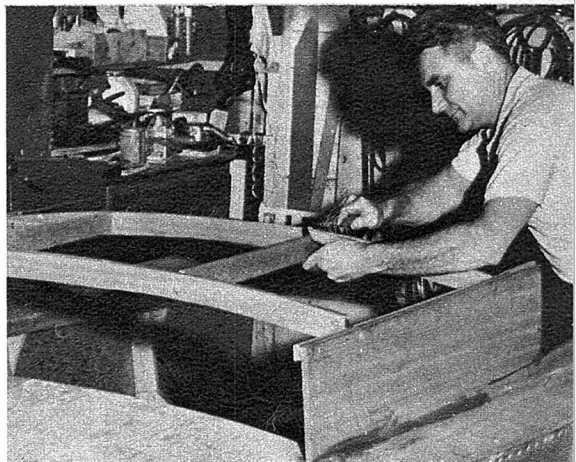




**FRONT DECK** in two sections joins over king plank, is fastened with glue, screws.



**FINS BEING SCREWED** to fin battens which frame cockpit. Side decks lie on battens.



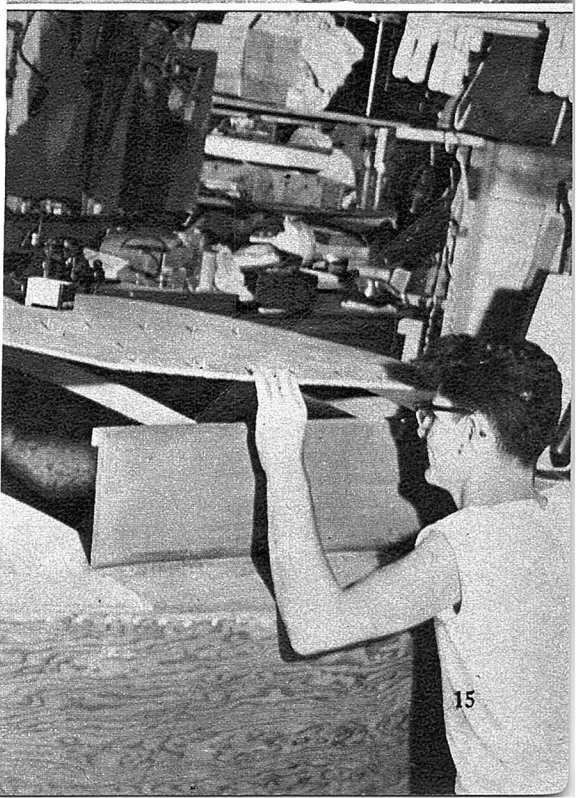
**ROOF BEAMS** cross between side walls to support cabin top as shown at the right.

**ONE-PIECE** cabin roof fastened in place with glue and screws as shown below, right.

standing. Rear seat is full width, mounted on braces running from Rib 4 to transom. A center strut supports the middle. Place seat back panel enough forward to allow tilting up of the motor. Hinging would be wise. Paint inside of boat to suit, and place  $\frac{1}{4}$ -in. ply panels between Ribs 2 to 3 and 3 to 4, lying right onto the bottom battens. One larger panel is cut to fit into the area under the shelter to provide flat floor for two sleepers. Seats in the test model were covered with foam rubber and leatherette. Evinrude Simplex remote controls, 11 ft. long, screw to panel at left of driver. Aqua Meter deck mount type goes on roof behind windshield, with an impact type tube on lower transom. •

## SPECIFICATIONS

Length .....	14 ft.
Beam .....	5 ft. 6 in.
Depth .....	27 in.
Depth at cabin .....	40 in.
Freeboard .....	23 in.
Weight .....	300 lbs.

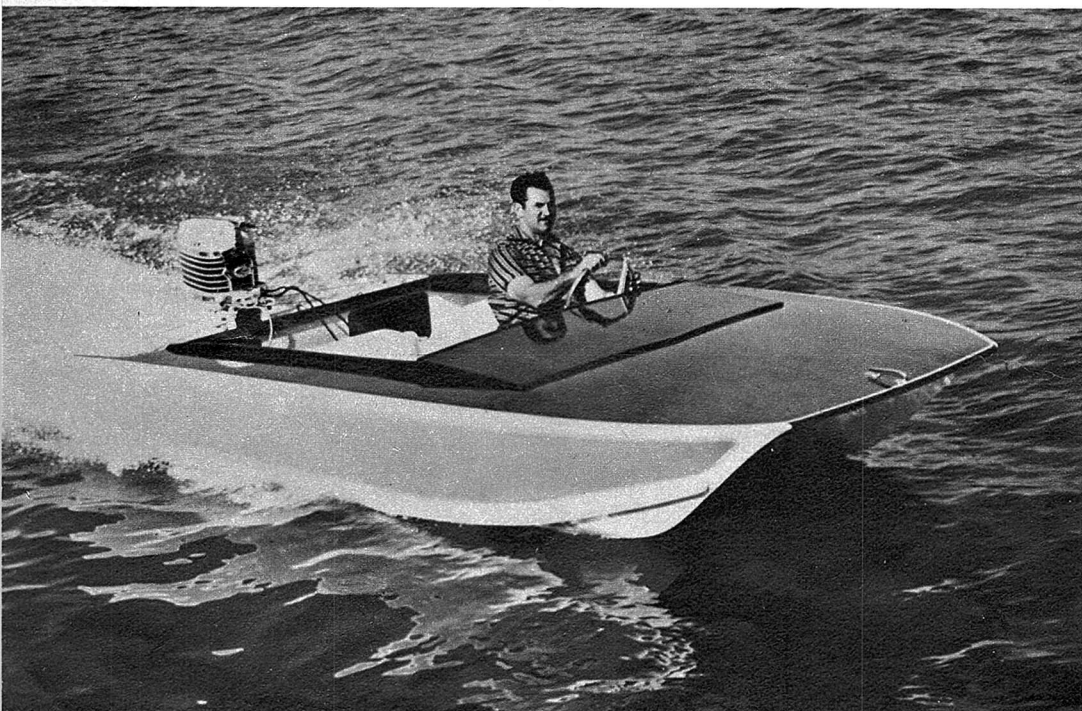


# How To BUILD 20 BOATS

## JET CAT

By Glen L. Witt, N.A.

Unique 14-ft. catamaran type is easy to build.



**SINGLE MOTOR** works fine, but for real "cat" performance, use two outboard motors.

**I**F YOU HAVE NEVER driven a "cat," you are in for one of the surprises of boating. The sensations are completely different from other conventional craft. When you go over the wake of another boat or hit a swell, you do not come down in a cloud of spray. You have no tendency to "dig in" or "track." On any but the largest wave, the hull will literally cushion itself, offering a smooth ride seldom encountered in small boats.

Turning is a sensation entirely different from conventional hulls. You turn very flat with little or no banking. With a turn that is too sharp, you will cavitate or lose the thrust of the propellers. With twin power, a very sharp corner can be made by slowing the inboard motor and increas-

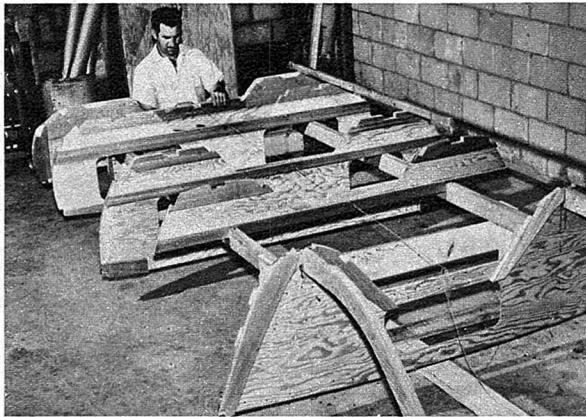
ing the speed of the outboard motor. Try different methods and you'll find the maneuverability amazing.

Good luck on the building of your Jet Cat. When you finish her, we will look forward to your comments, and, we hope, photos of the finished product. Until then, "time's a wastin'," so let's get a-buildin'.

### GENERAL SPECIFICATIONS

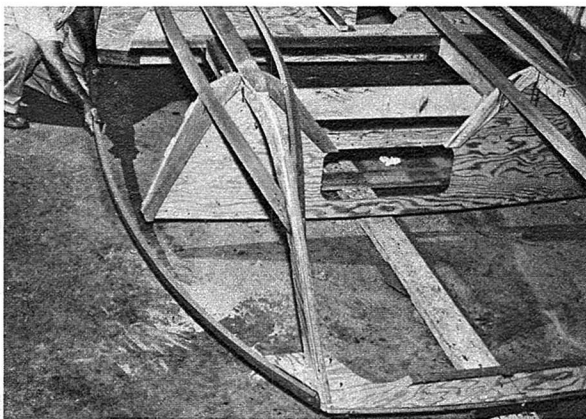
All materials used in the construction of the Jet Cat should be selected with thought and consideration that they will be used in a marine atmosphere, and subjected to the stresses and racking prevalent in a catamaran-type hull. All lumber should be first grade, free from knots. White oak, dark red Philippine mahogany, or spruce





**FRAME UP** on simple jig, centering the transom with a chalk cord as shown above.

**SHEER CLAMPS** are best anchored at stem breasthook and sprung around hull (below).



may be optionally used. Study box at right.

All plywood must be of an exterior type. Edge-stamped panel with the EXT-DFPA burned in will assure the builder of proven, controlled quality exterior panels. Grades and types of plywood are listed in the bill of materials.

All joints must be glued. Either a urea-resin or rescorinol can be used. The urea-resin is cheaper, and simpler to use, and may be considered adequate in all cases. Care in fitting, gluing, and fastening joints is necessary in catamaran construction.

Fastenings used may be either bronze or hot-dipped galvanized. Brass should not be used, due to the tendency to fracture under stress. The term "nails" refers to the annular-thread type, either bronze or

## BILL OF MATERIALS

### D. F. PLYWOOD, EXT., AB

- \*Frame bulkheads—2 pieces  $\frac{1}{4}$ "x4'x8'
- \*Transom, motor boards & knees—1 piece  $\frac{3}{4}$ "x4'x8'
- \*Stems & bow pieces—1 piece  $\frac{3}{4}$ "x3'x6'

### D. F. PLYWOOD, EXT. MARINE AA

- Tunnel planking—2 pieces  $\frac{1}{4}$ "x4'x8'
- Side and anti trip planking—2 pieces  $\frac{1}{4}$ "x4'x14'

### D. F. (lumber yard size)

- Athwartship motor well cleat—1 piece 2"x4"x7'

### MAHOGANY, PLYWOOD, EXT.

- Fore deck and cowl covering—1 piece  $\frac{1}{4}$ "x4'x8'
- Side deck—1 piece  $\frac{1}{4}$ "x3'x8'

### MAHOGANY, OAK OR SPRUCE

- \*Frame & transom lumber—40 random bd. ft. 1" stock
- Sheer clamps—2 pieces 1"x1 $\frac{1}{4}$ "x14'
- Chine logs—4 pieces 1"x2"x14'
- Anti trip chines—2 pieces 1"x2"x8'
- Inner anti trip chines—2 pieces 1"x1 $\frac{1}{2}$ "x16'
- Runner keels—2 pieces 1"x3"x11'
- Tunnel keels—1 piece 1"x2"x16'
- Deck battens—2 pieces 1"x2"x5'
- Strongback—1 piece 1"x2"x5'
- Carlins—2 pieces 1"x4"x8'
- Coamings—2 pieces 1"x6"x8'
- Intermediate deck beams—1 piece 1"x4"x6'
- Cowl beam—1 piece 1"x4"x6'
- Dash beam—1 piece 1"x6"x6'
- Motor well sides—2 pieces 1"x9"x2'

### FASTENINGS

- Screws: Wood type, flat head; bronze or hot dipped galvanized.
- $\frac{3}{4}$ " #8—7 gross
- 1" #8—2 gross
- 1 $\frac{1}{2}$ " #8—1 gross
- 2" #10—1 gross
- 3" #14—4 only

Carriage bolts: bronze or galvanized with nuts and washers.

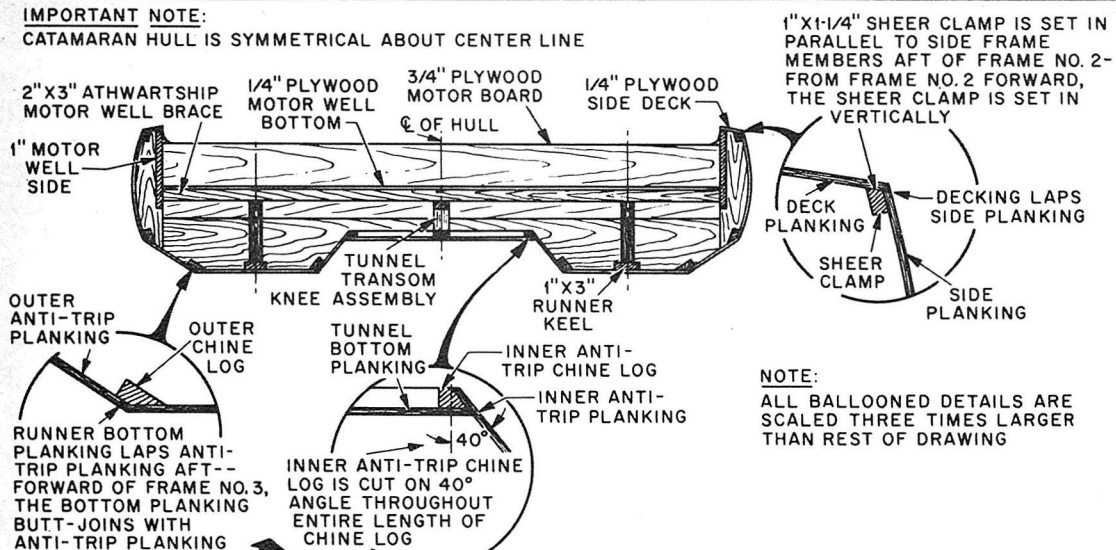
- $\frac{1}{4}$ "x6"—6 required
- $\frac{1}{4}$ "x5"—8 required
- $\frac{1}{4}$ "x4"—4 required

Nails: Annular ring type, Monel or bronze.  
1"—#12—3 pounds

Glue: Rescorinol or urea resin type.  
1 gallon or approx. 5 lbs.  
(depending on type)

NOTE: Items marked with asterisk (\*) are not required with frame kit.

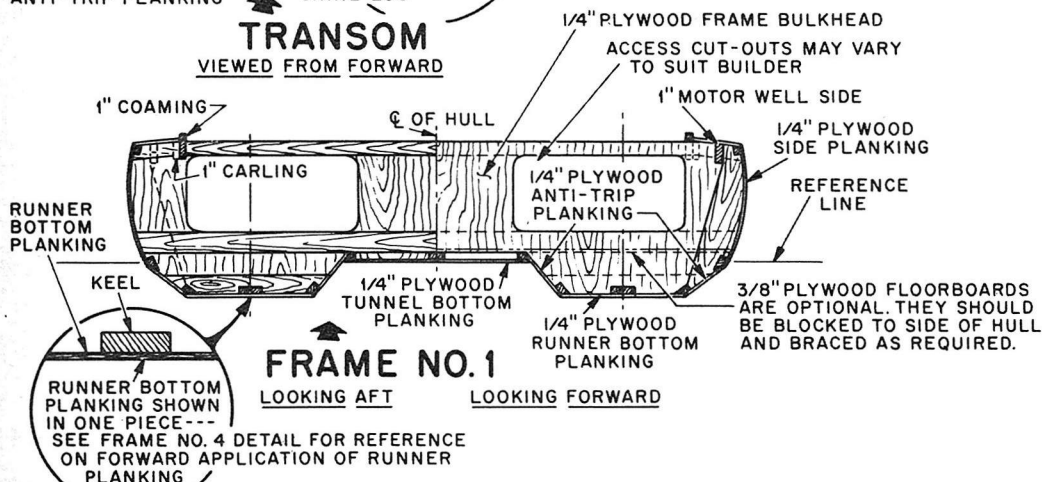
**IMPORTANT NOTE:**  
CATAMARAN HULL IS SYMMETRICAL ABOUT CENTER LINE



**NOTE:**  
ALL BALLOONED DETAILS ARE SCALED THREE TIMES LARGER THAN REST OF DRAWING

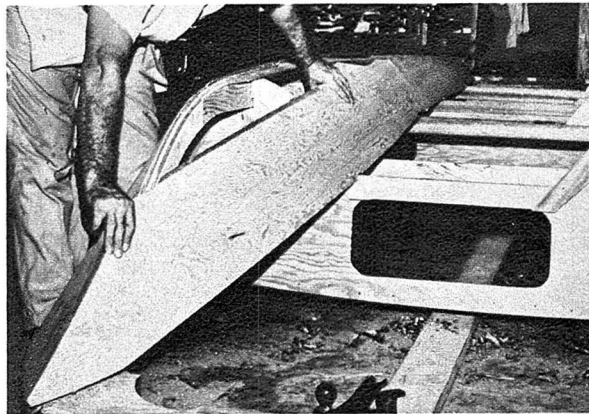
## TRANSOM

VIEWED FROM FORWARD

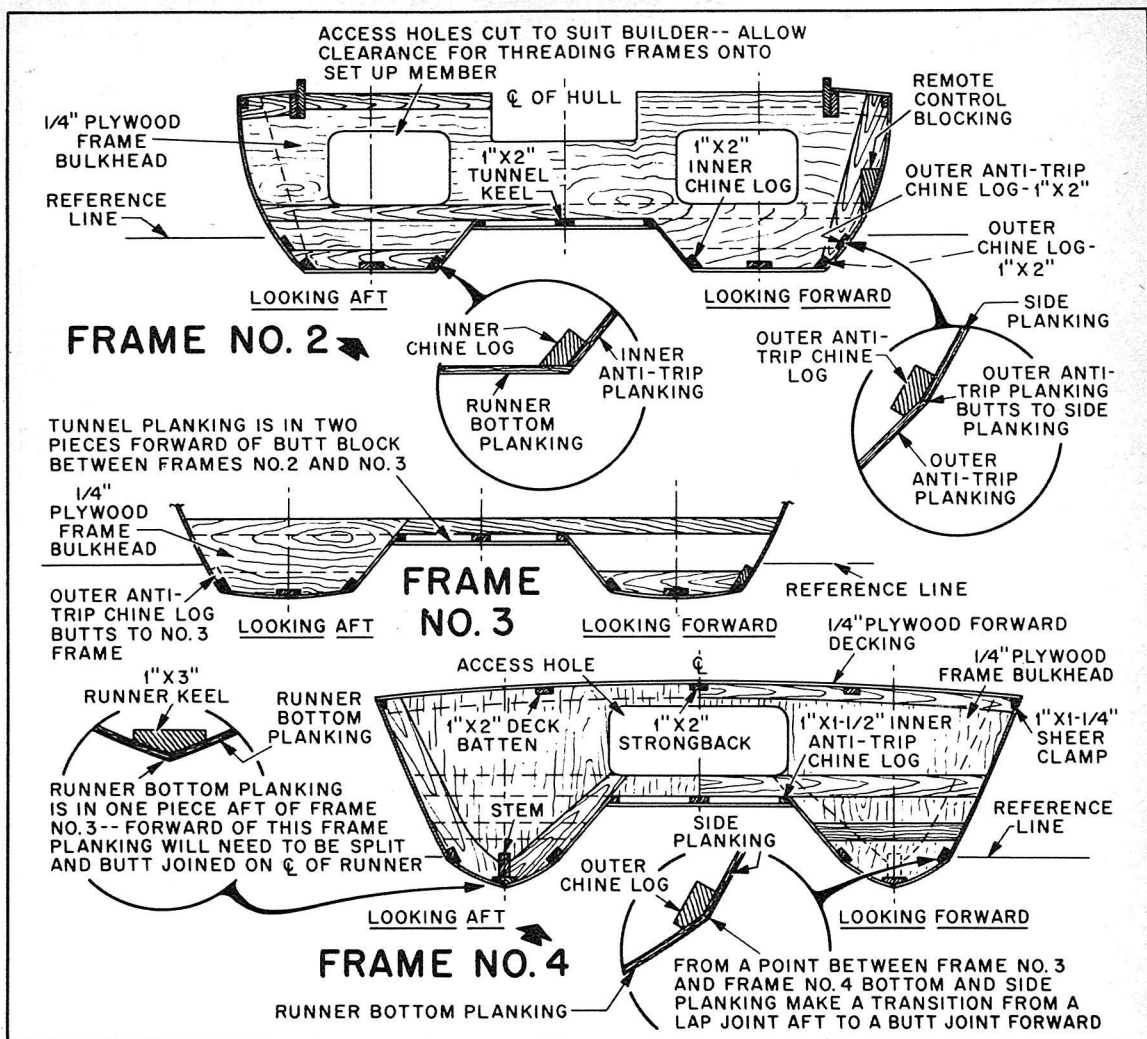


**SIDE PLANKING** panel is roughed to shape then clamped for final fitting to frames.

**INNER PLANKING** fitted to inside chine and stem. Inside edge is trimmed later on.







Monel. Fastening kits for the "Jet Cat" may be obtained from Glen L.

## BUILDING INSTRUCTIONS

**FRAMES:** The frames of the Jet Cat are actually bulkheads built from 1/4-inch plywood with 1-inch framing material. Fasten the framework to the bulkheads with 1-inch nails, spaced a maximum of 6 inches apart. Whenever the framework members lap on opposite sides of the plywood bulkhead, use 1 1/2-inch No. 8 screws. The indicated notches may be cut after assembly, taking depths and widths from the actual material to be used.

**TRANSOM:** The transom is cut from 3/4-inch plywood framed in 1-inch material. Since the transom is set at an angle, the bottom of the transom plywood and frame as well as the notches must be

angled 12 degrees. The notches are cut in the transom only, and not through the 3/4-inch plywood. Fasten the motor board of 3/4-inch plywood and the 1-inch frame to the transom plywood with 1 1/2-inch No. 8 screws.

**STEM:** Two stems are required on the catamaran, cut to shape from 3/4-inch plywood. Two layers are used, laminated together and screwed with 2-inch No. 8 screws, spaced a maximum of 6 inches apart.

**BOWPIECE:** The bowpiece is that member that ties between the twin stems, and forms the section of the boat. It is cut from 3/4-inch plywood. On either end at the point the stem joins with the member, the breasthook is integrated into the bow member. In assembly, use 1 1/4-inch nails or 1/2-inch No. 8 screws to fasten the breast-



**RUNNER PLANKING** butts from transom to beyond frame No. 3, overlaps toward stem.

hook members very firmly to the bowpiece.

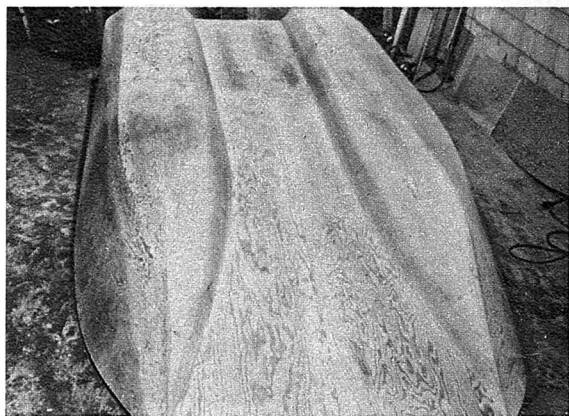
**TRANSOM KNEES:** Three transom knees are used on the Jet Cat. Two are put in during the set up time, the other after the hull has been righted. The two runner knees are cut to shape from  $\frac{3}{4}$ -inch plywood. Two laminations are used on each knee, screwing them together with  $1\frac{1}{2}$ -inch No. 8 screws.

**BUILDING FORM AND SETTING UP:** The building form is detailed in the drawings. The boat will be built bottom side up on two longitudinal members. It will be necessary to thread the frames No. 1 and No. 2 over these longitudinal members. The two longitudinal setup members should be level both lengthwise and athwartships. A chalk line is used to center each of the frames, while a level or builder's square may be used to plumb in the frames if they are true vertically. The angularity of the transom is governed by the transom knees. The bow assembly, with the twin stems and bowpiece is anchored into position at the proper height. Brace the frames to the form to one another to prevent movements after each is lined into place.

**RUNNER KEEL:** The runner keels are 1x3 inch in length from the transom to stems. Notch into the frames, and fasten with 2-inch No. 10 screws.

**INNER AND OUTER CHINE LOGS:** The 1x2-inch chine logs extend from transom to stem, fitting into the notches provided in each of the frames and transom. Fasten the chine log to the stem and frames, using 2-inch No. 10 screws with plenty of glue at each joint.

**SHEER CLAMPS:** The 1x1 $\frac{1}{4}$ -inch sheer clamps are in full length, extending



**TUNNEL PLANKING**, fitted carefully, is two panels to butt block, one beyond it.

from the transom to the breasthook at the stem. This sheer clamp is set in vertically from the bow to the midships.

**ANTITRIP CHINE:** The 1x2-inch anti-trip chine extends from the transom to the partial frame at No. 3. It is fitted into notches, and fastened at each frame with 2-inch No. 10 screws.

**FAIRING:** All of the framework must be faired or beveled to enable the planking to lie flat or mate on all members. Use a plane for the long, straight sweeps, checking to make sure that the planking will mate to all members. This will require removal of material or angling the inner and outer chines, keel, sheer clamp, antitrip chine, frames, transom, and stems. Check and re-check your fairing to be sure that the planking will mate properly. The after sections are straight lines longitudinally.

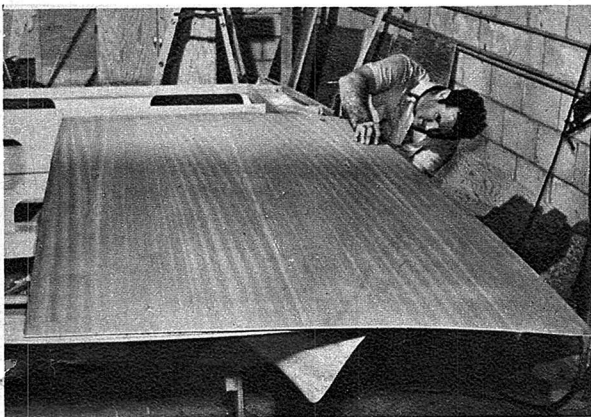
**SIDE PLANKING:** The side planking is  $\frac{1}{4}$ -inch plywood in full length. If preferred, splices may be made as per the detail in the plans. Rough-mark the panel to size, and then fit accurately along the portion that will butt joint with the bottom planking. The other extremities may be left long for subsequent trimming after fastening in place.

**ANTITRIP PLANKING:** The  $\frac{1}{4}$ -inch antitrip planking is butted to the side planking along the antitrip chine.

**INNER ANTITRIP PLANKING:** The  $\frac{1}{4}$ -inch antitrip planking is installed similarly to the outside planking. This planking member is applied before the inner antitrip chine.

**INNER ANTITRIP CHINE:** The inner antitrip chine is precut from a 1x1 $\frac{1}{2}$ -inch member to a 40° angle on one edge. Taper the forward end to make the bowpiece. The





**FRONT DECKING** is laid in place, marked and cut. Excess is used for cowl covering.

beveled edge will fit against the just applied inner planking surface. This member bears directly on the frames. Fasten the member into the tunnel frame with 2-inch No. 10 screws. The  $\frac{3}{4}$ -inch No. 8 screws are driven from the inside of the antitrip planking into the inner antitrip chine member.

**REFAIRING:** Planking that has been applied must be trimmed along the chines and overlapping edges so that the bottom planking will mate to all areas.

**BOTTOM PLANKING RUNNERS:** The bottom runner of  $\frac{1}{4}$ -inch plywood planking is applied in full width from inner chine to outer chine. The panel is split along the centerline of the keel to a point midway between frames No. 3 and No. 4. After fitting the panel, coat all mating areas with glue, and anchor in place with  $\frac{3}{4}$ -inch No. 8 screws, spaced 3 inches along the chines and keel. Use 1-inch No. 8 screws at the transom and stem, spaced about 2 inches apart.

**TUNNEL PLANKING:** The tunnel planking is fitted in two  $\frac{1}{4}$ -inch plywood panels in the forward portion. From that point aft, it is butt-joined and a single portion is used in the aft section. The butt joint is made between the frames No. 2 and No. 3 per the details in the drawings.

**FLOORBOARD:** To simplify working in the interior, the floorboards can be installed at this time. Plywood  $\frac{3}{8}$  inch thick is used in the aft floorboards, while  $\frac{1}{4}$ -inch plywood is satisfactory for the forward floorboards.

**DECK FRAMEWORK:** An intermediate beam to the same crown as station No. 5 is located forward of frame No. 4, as indicated in the plans. The 1x2-inch strongback and

#### PLAN SET PLUS FULL SIZE PATTERNS

are available for building this boat at a cost of \$20.00. **FRAME KIT** which include the above are \$120.00 (plus shipping costs). Send all orders to Glen L. Marine Designs, 9152 N. Rosecrans, Bellflower, California. Specify Plan FB-JET CAT in plans or kit.

deck battens are then notched into the deck beams and fastened into position.

**CARLING:** The carling extends from frame No. 1 to the junction of the deck beam at frame No. 4. This is a straight member as viewed from above, so use a chalk line to true the member in. Fasten to the frame and blocking with  $1\frac{1}{2}$ -inch No. 8 screws.

**SELF-BAILING MOTOR WELL:** A self-bailing motor well is provided. An athwartship member rests on top of the runner knees. The center transom knee is built up on either side of the center keel. Motor well sides of 1-inch material extend from the transom to frame No. 1. Cleats are provided for the  $\frac{1}{4}$ -inch bottom of the transom well.

**DECKING:** The decking is applied joining in two halves over the strongback on the centerline. Fir or mahogany can be used,  $\frac{1}{4}$  inch thick. Nail into position with the 1-inch annular thread nails. If a cowl is not desired, a duplicate deck beam should be installed at the dash position, and the deck extended past the No. 4 bulkhead frame.

**COAMINGS:** The 1-inch mahogany coamings are dimensioned in the drawings, and are parallel with the lower edge of the carling.

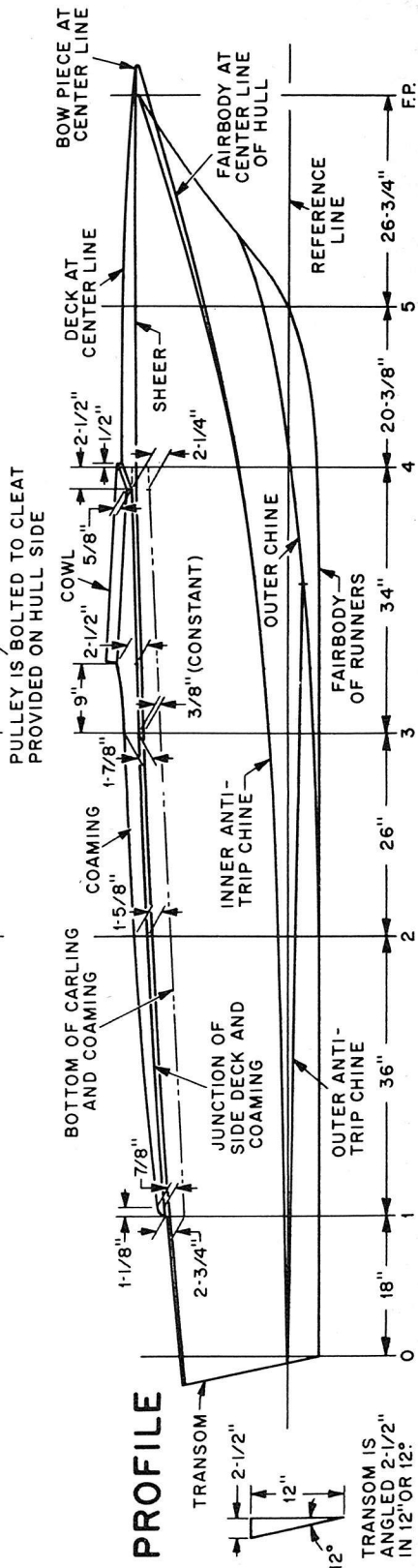
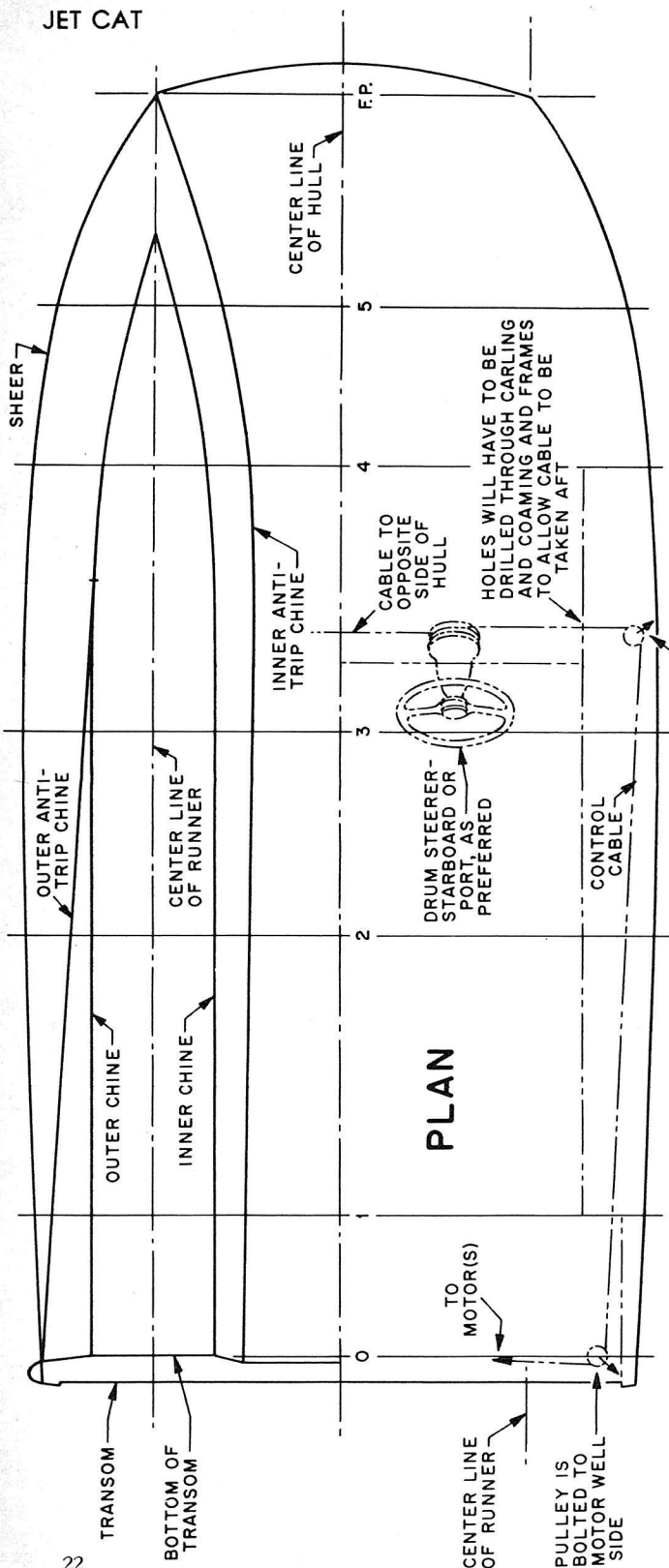
**DASH BEAM AND COWL BEAM:** The dash beam and cowl beams are cut from 1-inch mahogany to the crown of the deck beam at No. 4.

**COWL COVERING:** A  $\frac{1}{4}$ -inch mahogany cowl covering is put on in two parts, with joint over the centerline.

**SEATS:** The seats are  $\frac{3}{8}$ -inch plywood installed per the drawings. An option provides for an aft seat if so desired.

**FIBERGLASSING:** The fiberglass covering of any fir plywood boat is desirable. It is especially advantageous to fiberglass a catamaran type hull. Kits are available to fiberglass the complete bottom, sides, and transom with fiberglass, resin, catalyst, brushes, squeegees, and instructions from Glen L. (address in box, above). •

# JET CAT







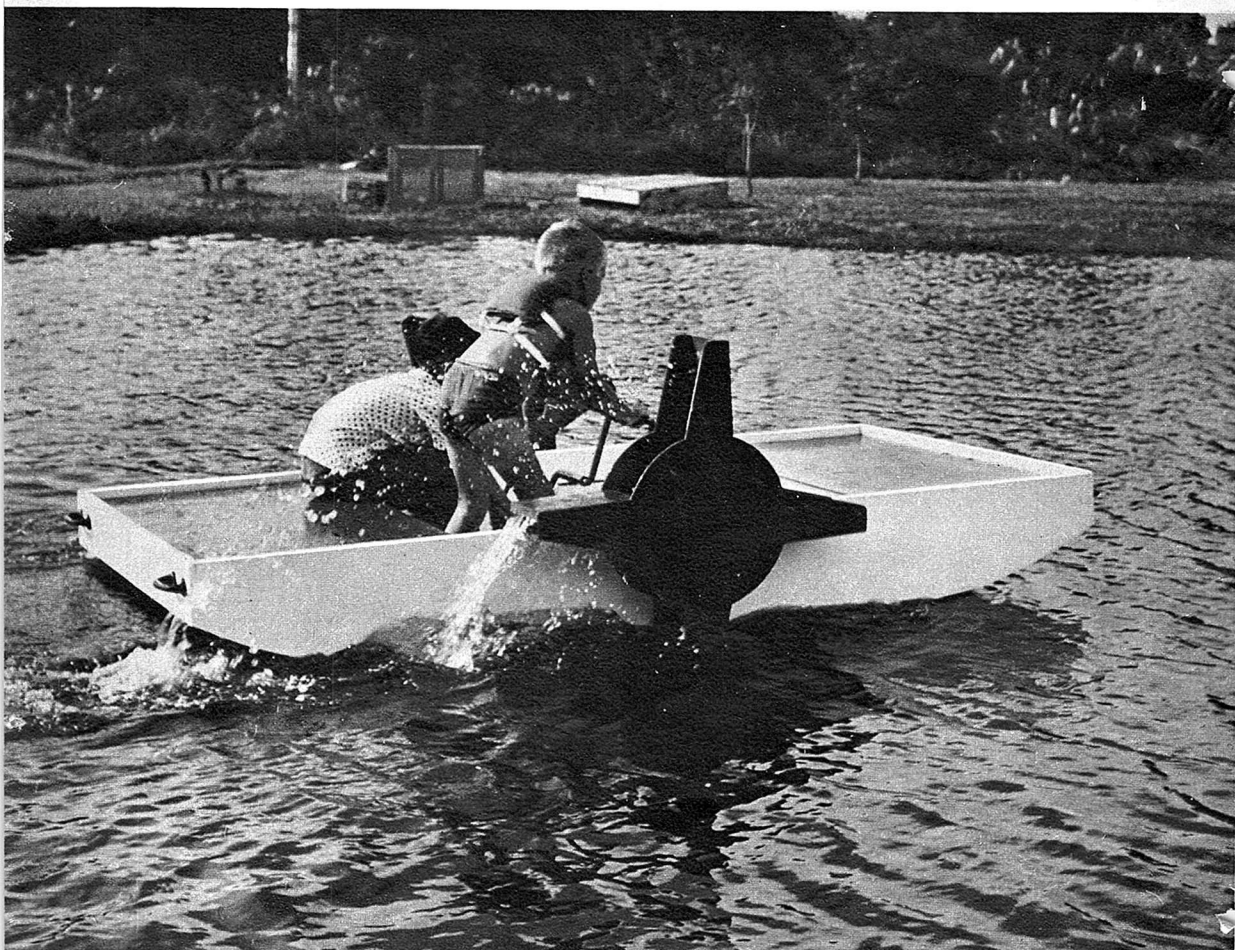
23

# How To BUILD 20 BOATS

## SIDEWINDER

By Hal Kelly

This paddle wheel boat is a barrel of fun for the kids—build it for less than \$35.



**B**UILDING this boat will really put you in solid with the small fry—if you will give them a chance to play with it when it's finished. And the job takes no more than a weekend for anyone who can cut wood along a line. You don't even need power tools, though they're great for doing a fast job. Study plans carefully, then go to work.

When it comes to moving the boat, Junior needs only a few minutes of practice before he's in complete control. A four-year-old can do it and my own six-year-old can make her go faster than an adult can row a boat. There's no front or back—she goes just as well in either direction—and she'll spin around on a floating leaf if the cranks





**SIDES** and centerpiece have same curves but are cut separately; it's too awkward to join the three and cut them together.

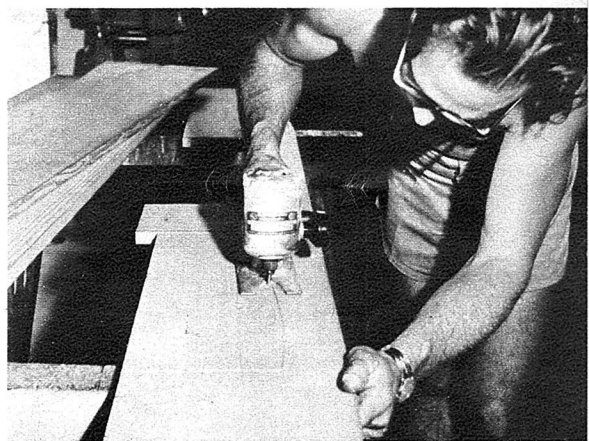


**WHEN CUT**, the three are joined temporarily and planed to equal shape; check with square to be sure sides are 90° to edges.

are turned in opposite directions. It's great fun and a safe boat, too.

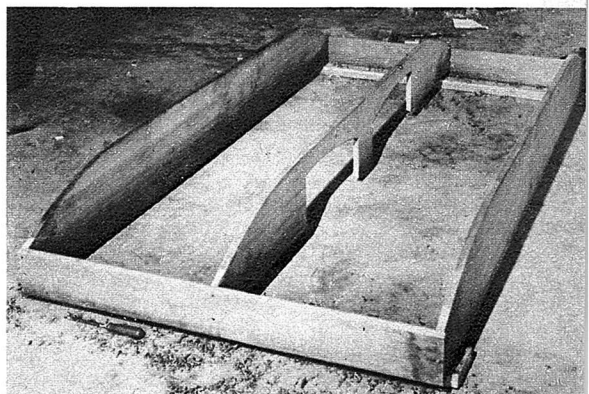
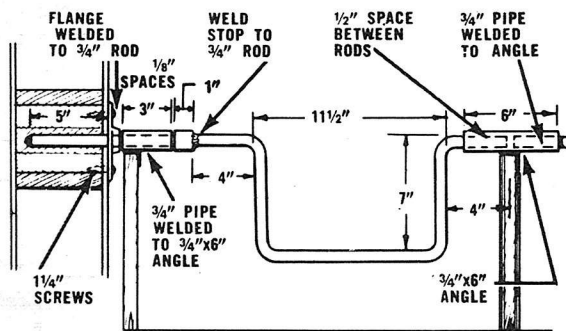
No jig is necessary for construction. The sides and center section are cut to the dimensions shown and, since they have the same bottom curve, are clamped together for planing. They must match exactly on the underside, with the edges square to the sides, so that the bottom will lie flush on all three. When this is done, the end pieces are cut to size and then dadoed at the center and rabbeted at the ends to half their depth. Then the whole frame can be assembled with waterproof glue and 1¼-inch No. 8 screws. Addition of an exterior plywood bottom completes the hull except for the center gussets, the seat framing and the seats. Before adding the seats, apply one coat of white Firzite and two coats of exterior enamel.

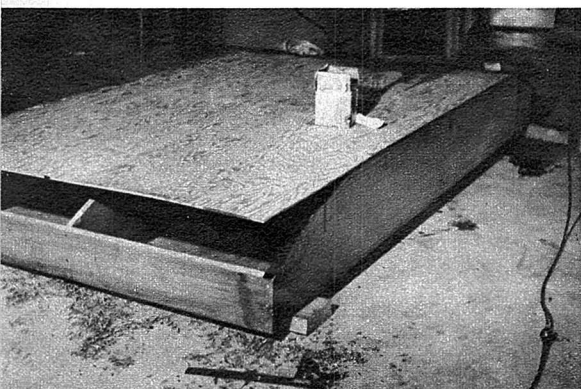
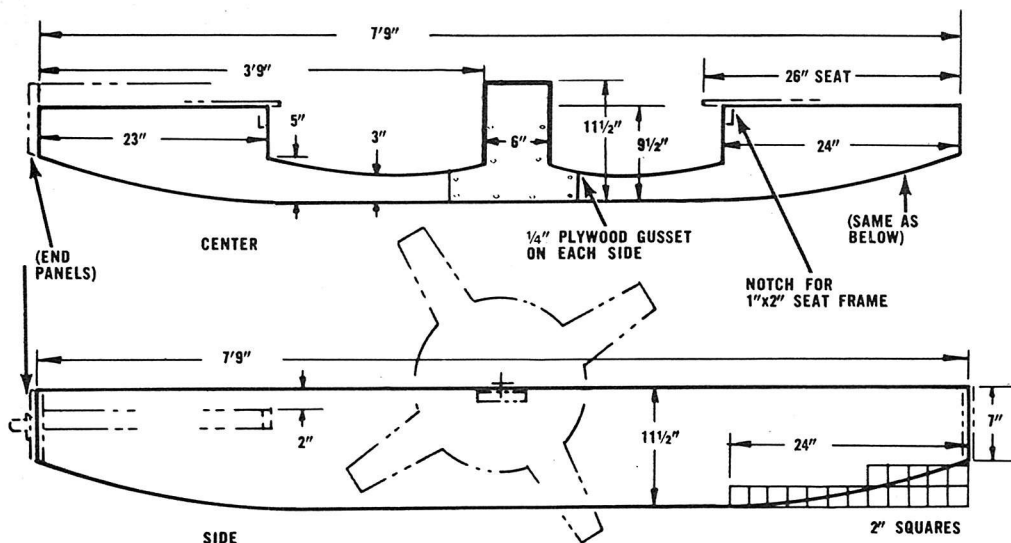
The paddles are easily constructed of ¼-inch exterior plywood and solid stock. They're assembled with glue and ¾-inch No. 16 Anchorfast nails and painted in the same manner as the hull. Ours are bright red to match the seats and contrast nicely with a white hull.



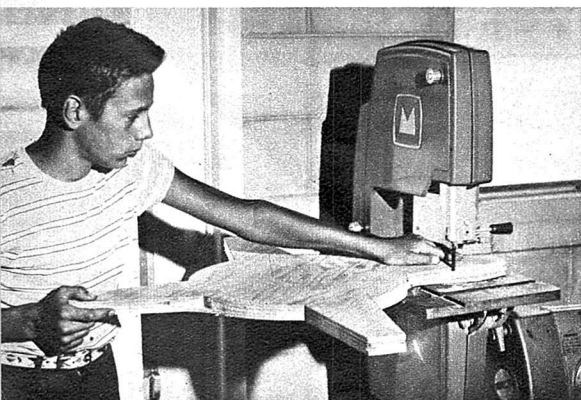
**SABER SAW** is used for making cutouts in center section; this tool can be used for all the cuts if band saw isn't available.

**FRAME** is assembled with glue and screws; the end pieces are dadoed and rabbeted to take center section and sides respectively.



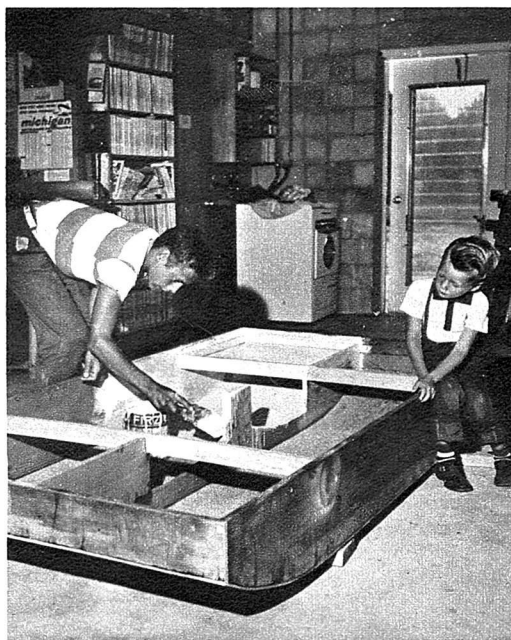


**BOTTOM** is 1/4-in. plywood which is glued and screwed down, starting at the center and working alternately toward each end.

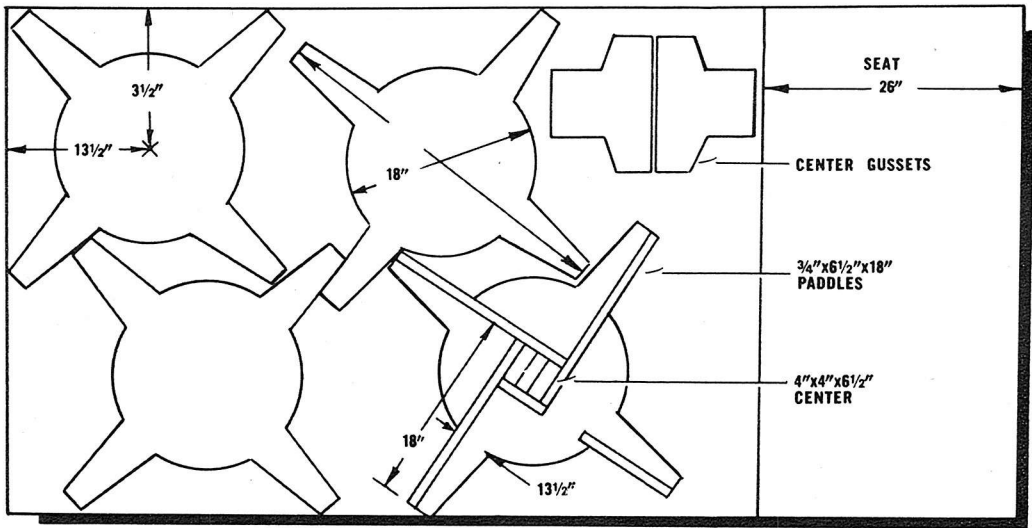


**PADDLE WHEEL** sides can be cut with a band saw in one operation if four pieces of 1/2-in. exterior plywood are sandwiched.

**LARGE-SCALE PLANS**  
are available. Send \$2.00 to MI Plans Service, Fawcett Building, Greenwich, Conn. To speed handling, please specify Plan No. B-241, Paddle Wheel Boat.



**PAINT JOB** is begun before seats are in place. All woodwork gets a coat of white Firzite and two coats of exterior enamel.

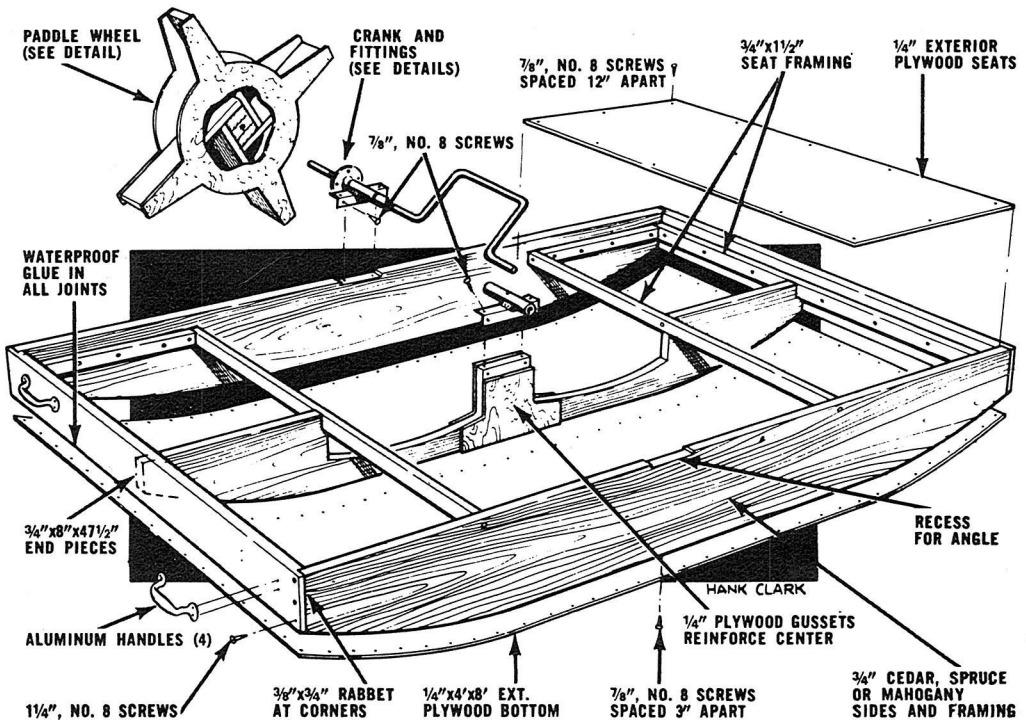


PARTS FROM ONE 1/4"x4'x8' EXTERIOR PLYWOOD SHEET

The best approach to building the cranks is to have the local metal shop make them up. They'll have the angle iron and 3/4-inch metal rod in stock. When the flanges and the stops are welded to the rods, be sure that a 1/8-inch space is allowed between them and the pipe bearings. My total cost

for the crank material and labor was under eight dollars.

Study the drawings and photographs and get to work. You'll look far and wide before you find another project which provides so much fun for kids at so little labor and cost. •



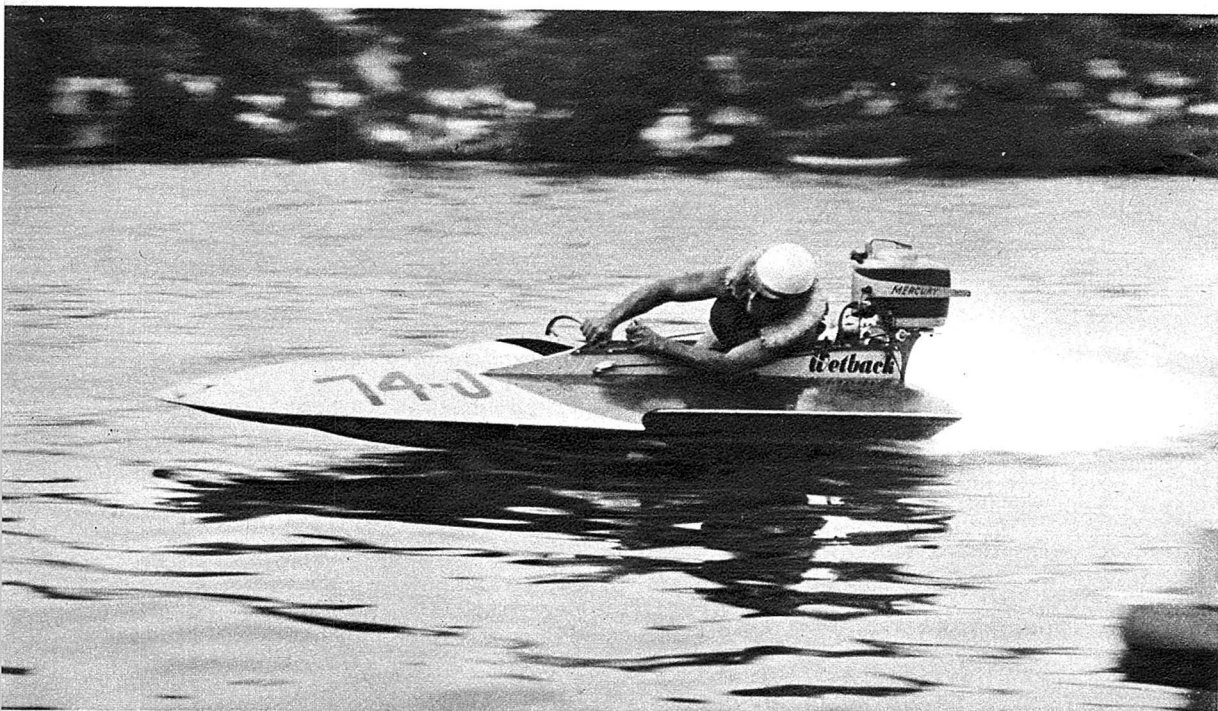


# How To BUILD 20 BOATS

## WETBACK

By Hal Kelly

A Class B & C Hydro that you can rely on for lead-the-pack performance every time.



**W**ETBACK is primarily designed for stock outboard racing motors, for both class "B" and class "C." This is not an off-the-drawingboard plan. Wetback was designed, built and raced, and is a proven trophy winner, a truly tested plan. She is a fast, safe, rough water hydro. On ideal racing water she runs like a bomb, with her sponsons barely tapping the water. On rough water she really comes into her own; on a two-foot chop she can really cook. Highly maneuverable, she can turn on a dime. For the fellow who wants to get the most speed out of his pleasure motor, Wetback is a good bet. The transom height must be increased to about 16 inches for a motor with a standard lower unit. Wetback will weigh under 115 lbs. with hardware if built with the materials listed.

First, I suggest spending a few hours studying the plans and the photographs of her in construction. Total cost of materials will vary. Depending on where you live and the grade of plywood you use, she could cost anywhere from \$75 to \$135.

After accumulating the stock listed in the bill of materials, you are ready to start on the ribs. Due to space limitations only half of each rib is shown, but since the ribs are symmetrical, each side being the same shape, this will offer no problem. Cut out all of your rib components and place them on the full size rib drawings using  $\frac{3}{4}$ -inch No. 16 Anchorfast nails to secure the  $\frac{1}{4}$ -inch plywood to the frames. A piece of thin wax paper or cellophane under the ribs will keep the glue off your

plans. Weldwood glue is used throughout. Some changes were made in the plans that differ slightly from details in the photos. Stringers were not found necessary on the chines, and all the afterplane on the transom was removed. Stick to the plans for placement of all lightening holes.

Rib No. 1 is made from  $\frac{1}{4}$ -inch thick plywood. Cut the  $\frac{1}{4}$ -inch wide slits in it where indicated on the plan. These engage the main girders. The small blocks that the battens, etc., are attached to, are glued and fastened to the rib with two  $\frac{3}{4}$ -inch No. 16 Anchorfast nails (this same size Anchorfast nail is used throughout the boat). Rib No. 2 is cut from  $\frac{5}{8}$ -inch thick Sitka spruce,  $\frac{1}{4}$ -inch plywood gussets are glued and fastened in place with Anchorfast nails in the position indicated on the plan. The holes are cut into the plywood with a circle or fly cutter before attaching to the frame. The fly cutter is almost a must in building this boat what with the great number of different sized holes being cut in the ribs and girders. It is best used in a drill press but can be handled quite nicely in a  $\frac{1}{4}$ -inch electric drill. The middle plywood deck support that is attached to Rib No. 2 is put in place when the hydro is turned over to finish the topside.

Rib No. 3 is assembled similar to Rib No. 2. The Sitka spruce is also  $\frac{5}{8}$  inch thick. Rib No. 4 is made of  $\frac{1}{2}$ -inch thick Honduras mahogany ( $\frac{3}{4}$ -inch thick Sitka spruce can replace this). The whole rib is backed with

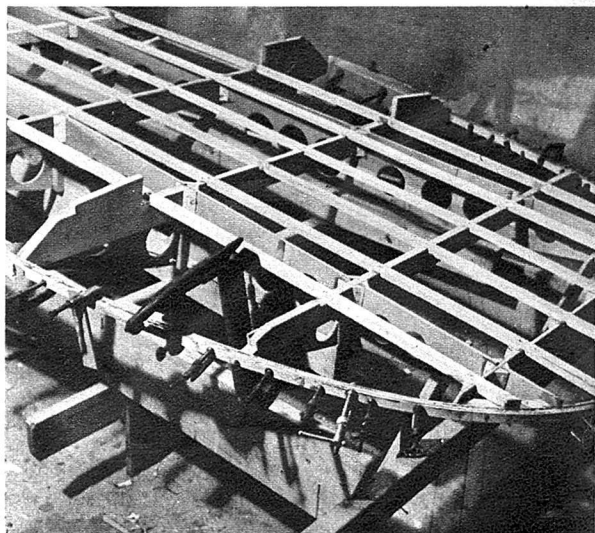
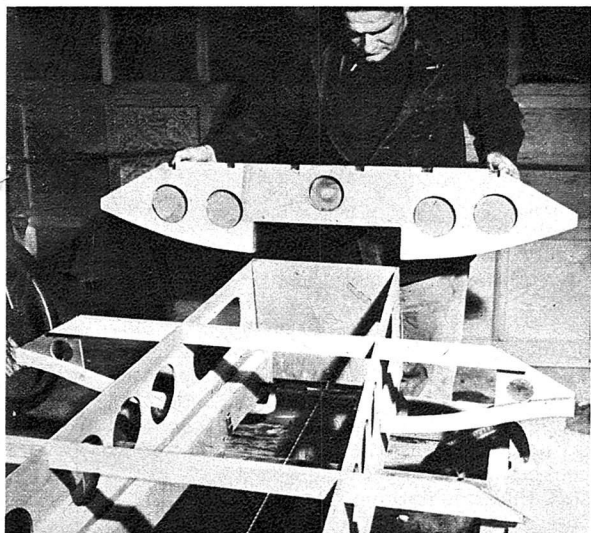
$\frac{1}{4}$ -inch plywood. Note that four holes are cut in the mahogany, and two in the plywood. This plywood forms the back of the sponson, and is glued and fastened with Anchorfast nails. Rib No. 5 and No. 6 are identical except where they meet the main girder which also forms the cockpit coaming. Three-fourths-inch thick Sitka spruce is used as the deck beam with  $\frac{1}{4}$ -inch plywood gussets glued, nailed for support.

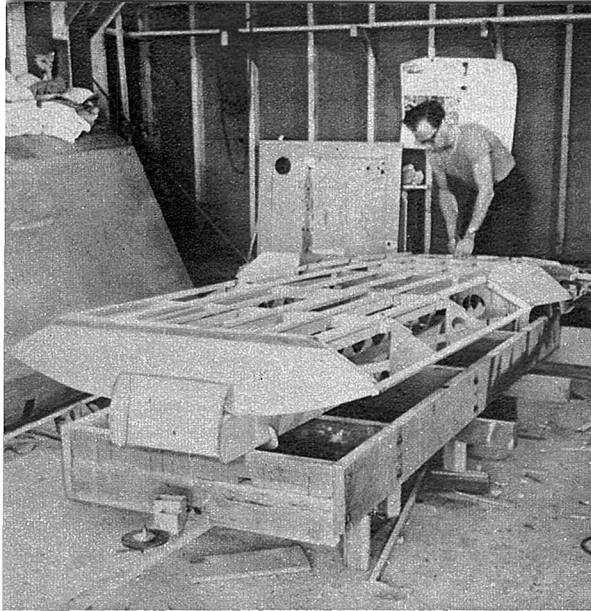
The transom is made up of two individual pieces which are attached separately to the girders. The transom framing is  $\frac{3}{4}$ -inch thick Sitka spruce, with five holes cut into it. It must be carefully notched to receive the battens and chines. The  $\frac{1}{4}$ -inch thick plywood is cut a bit oversize. Glued and nailed to the transom frame, this plywood unit is carefully trimmed to size as indicated on the plan. Note side view as to the proper angle on the bottom. This transom should be ten degrees off vertical. The other part of the transom, the motor mount, is made up of 1 piece of  $\frac{3}{4}$ -inch thick plywood with  $\frac{1}{4}$ -inch plywood pieces glued to each side. Cut this to the size indicated in the plan. Remember to cut the slight angle necessary where the transom mount engages the main girders for a good snug fit.

Main girders: This is the heart of your boat and everything sprouts off it like the branches of a tree. Both girders must be the same and so are cut together with all necessary holes cut into them. Check

**GIRDER BEAMS** are set up on jig, transom to be glued and screwed to motor mount.

**BOW PIECE** clamped in place. Note notches for battens in ribs for the tunnel shape.



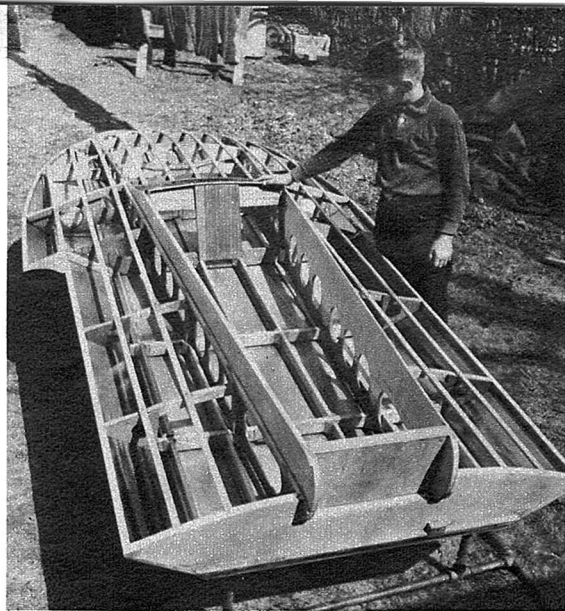


**ALL RIBS, battens, stringers in place. Next come sponson battens. Fair them first.**

profile drawing of the girder for correct placement of lightening holes, etc. Mark where you will notch the girders for all the ribs. Cut the notches for Rib No. 1 only, and slip Rib No. 1 into the girders. The motor mount part of the transom is temporarily fastened at the proper angle. Take two 2 x 3's; stand on edge at same angle the girders are running; slip the girders over the 2 x 3's so that they straddle them. This unit is carefully trued up. Then level and square the girders and 2 x 3's in relation to each other. Fasten the 2 x 3's to the base and clamp the girders to them. Take Rib No. 1 and motor mount off the girders. Glue and permanently fasten them to the girders, Rib No. 1 with glue blocks and 1-inch wire brads. Fasten the motor mount with glue and Anchorfast nails spaced about 1 inch apart.

Carefully cut the notches in the girders and fit the rest of the ribs in place, checking the rib plan for proper depth, and girder profile for placement. All ribs are fastened with glue blocks, 1-inch wire brads and glue to the girders. Small details can be well clarified by a careful study of the step by step photos of Wetback in construction. The transom is carefully fitted, glued and screwed with 1½-inch No. 8 screws to the motor mount. The back of the girders are glued and nailed to the transom at the motor well. After the ribs and coaming braces are in place the battens are glued and screwed in place with 1¼-inch No. 8 screws, leaving them a little longer than necessary at the bow.

The chines are next. The bottom angle



**STERN VIEW of topside construction, no afterplane necessary. Varnish inside now.**

on the chines can be cut on the table saw so that no fairing will be necessary. These are glued and screwed in place to the ribs. The bow is made up of three ¼-inch by ¾-inch strips of spruce. Cut the battens and chines to the proper angle and length, using one of the bow strips as a guide. All three strips are coated with glue on both sides, except the outside strip. They are grouped together while the glue is wet, bent and nailed in place at the battens, chines, and ribs. The bow is clamped together every few inches with "C" clamps.

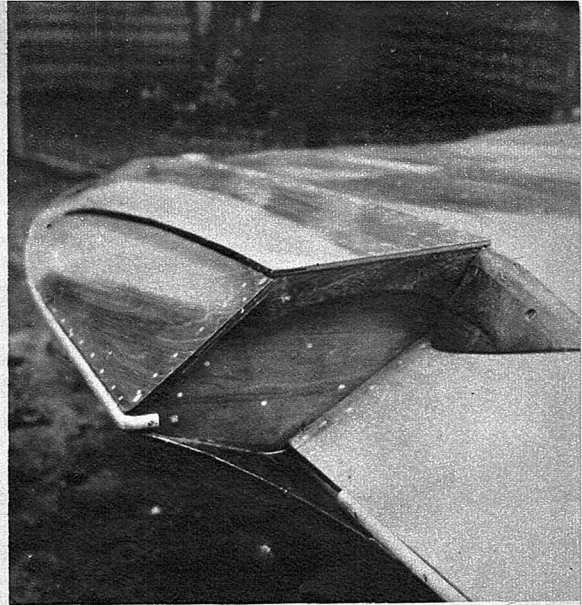
The stringers are glued to the ribs and held in place with glue blocks. Screw the battens to the stringers with 1¼-inch No. 8 screws. The sheers are also cut on a table saw to the proper angle of the chine and deck so that no fairing is necessary at this point. The inside of the sponsons are next. Study plan views and rib drawings for shape and position. The other sponson chine is next, running from Rib No. 4 to bow. The fin brace is glued and screwed to Rib No. 4 and No. 5 with 1¼-inch No. 8 screws.

Most of the fairing necessary will be around the sponson and a little at the bow. This takes more patience than skill and has to be carefully faired so that the plywood planking will seat on all bearings evenly. Frequent checking with an accurate straightedge will be a big help. On any curved surface, be sure that the curve is smooth. Check the bottom for hooks or rockers, especially the last two feet. Make sure that it is flat and straight. The bottom, starting from Rib No. 4 toward the front,

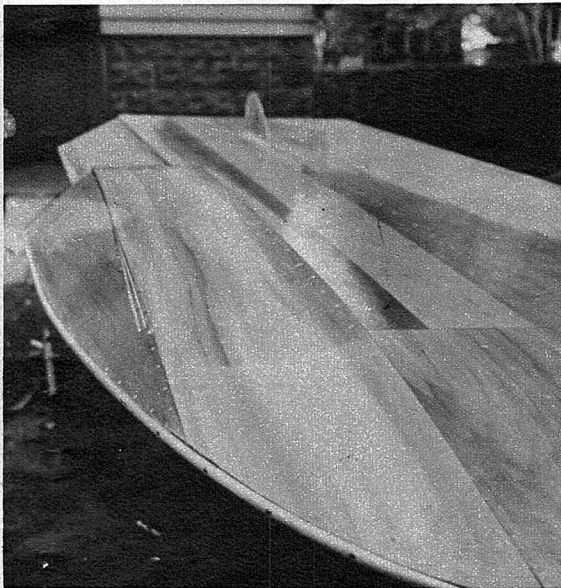




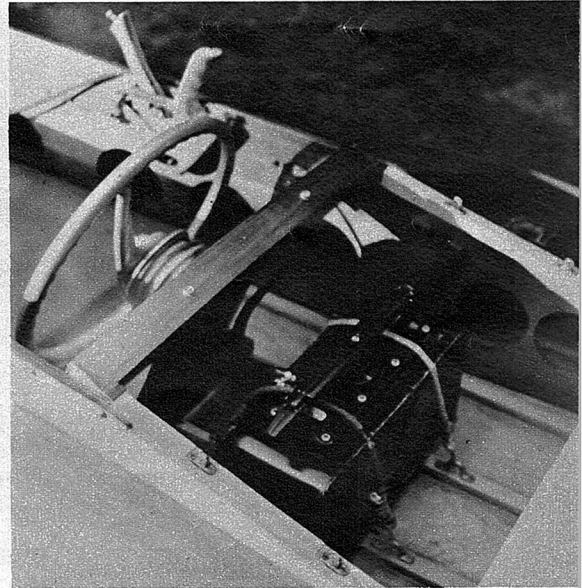
**FABRIC** decking almost all tacked in position. Give six coats of dope before painting.



**FINISHED** sponson. Note lip where sides and bottom meet fades to nothing at front.



**FRONT** view of sponson. Correct angle and workmanship at this point are important.



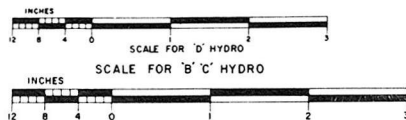
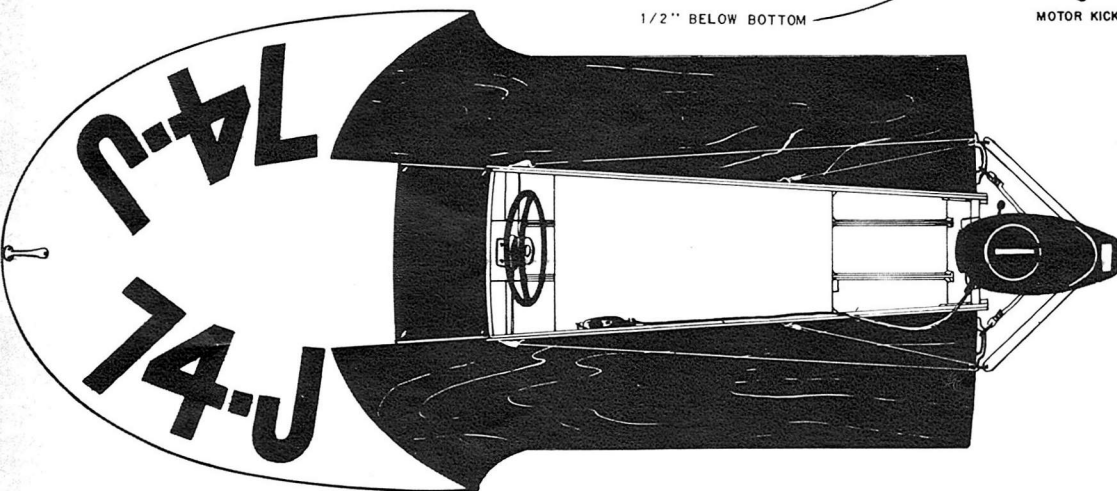
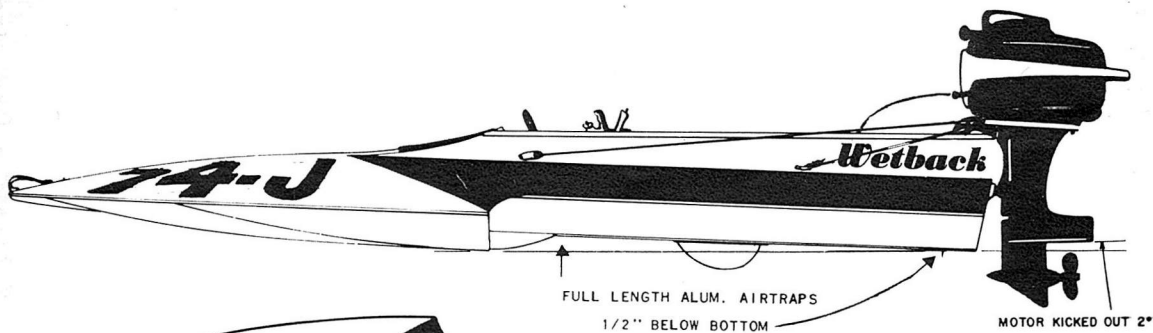
**GAS** tank held by shock cord. The  $\frac{1}{4}$ -in. plywood is hatch cover, with twist catches.

has a hollow or tunnel built right into it.

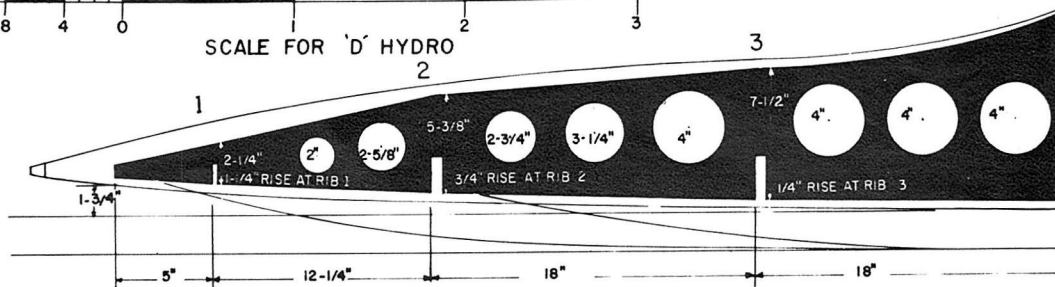
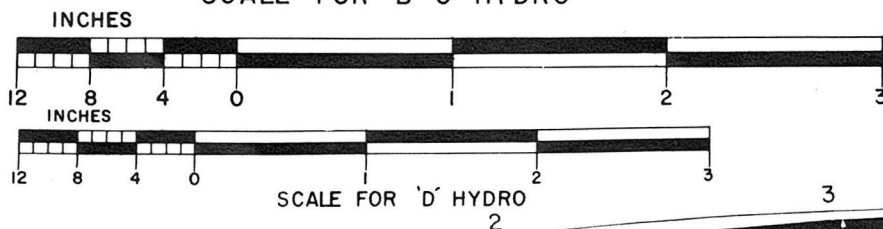
The  $\frac{1}{4}$ -inch thick plywood non-trip chines are fitted next. They run from Rib No. 4 to the transom. Glue and nail in place with Anchorfast nails. Then the non-trip is carefully faired at the chine. The afterplane of the sponson is next. This is  $\frac{3}{4}$ -inch thick mahogany. Fasten to the sponsons with glue and  $1\frac{1}{4}$ -inch No. 8

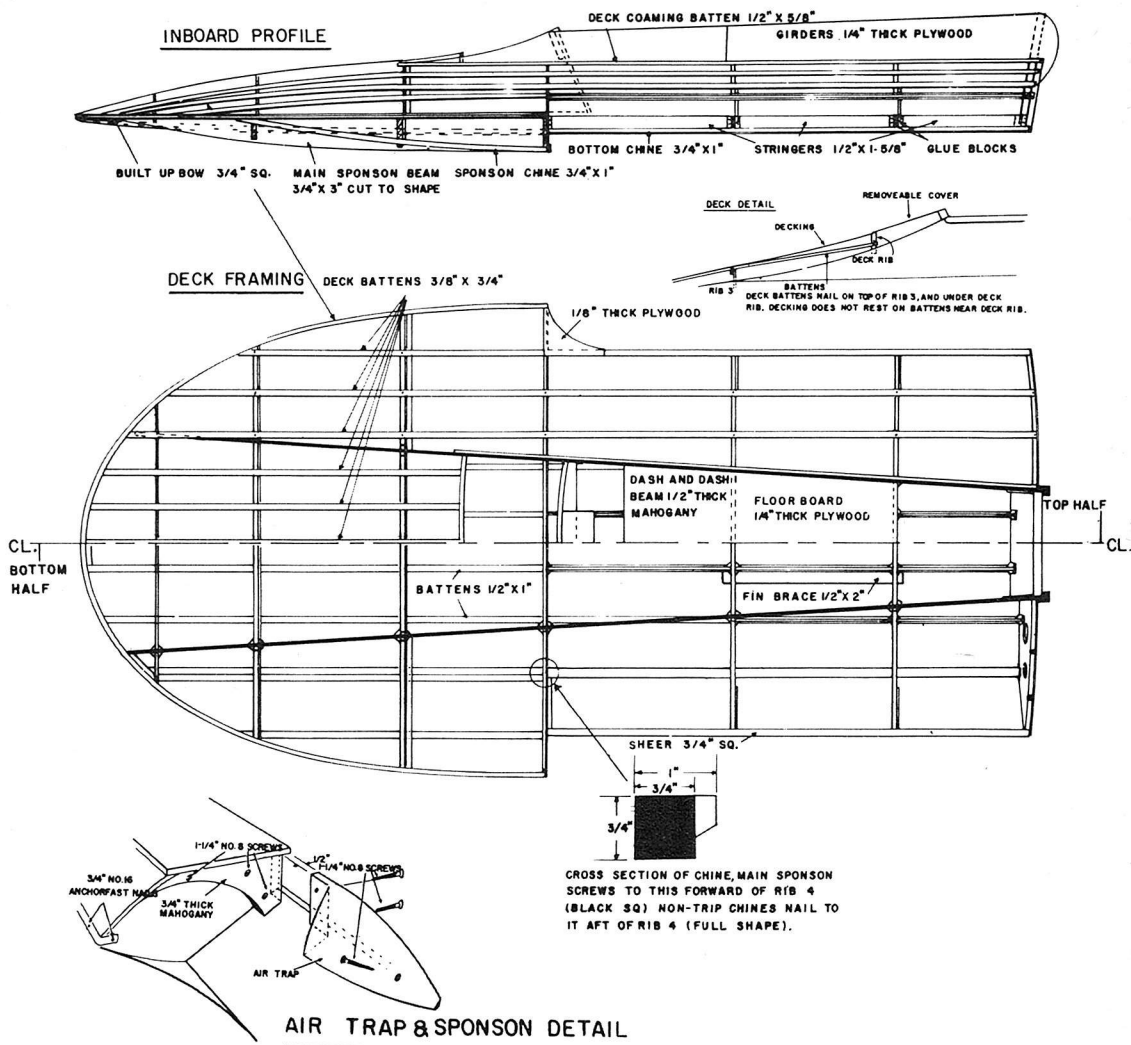
screws. Note that the afterplane is set in  $\frac{1}{2}$  inch from the inside of the sponson so that the small air traps may be screwed to them with  $1\frac{1}{4}$ -inch No. 8 screws.

The bottom is carefully cut to the correct width to fit between the sponsons and temporarily fastened in place. The bow shape is marked off on the bottom. Also mark off all the battens, etc., so you will

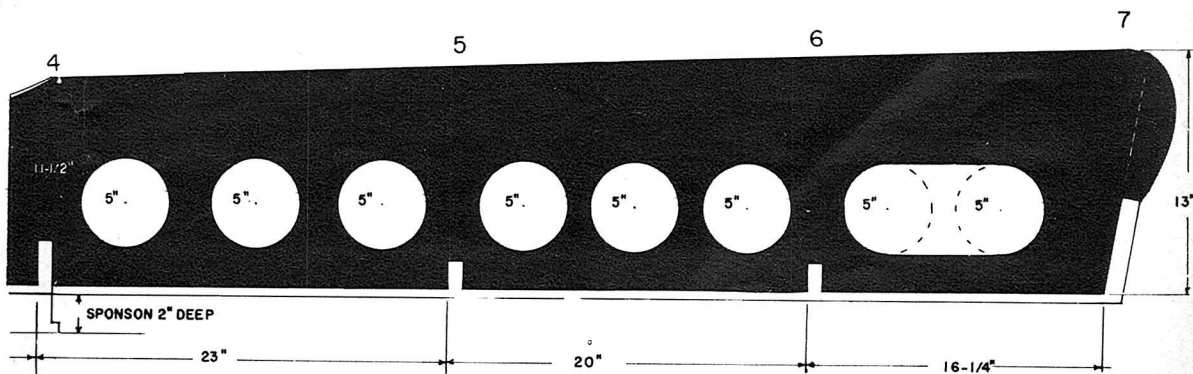


SCALE FOR 'B' 'C' HYDRO





## GIRDER PROFILE





know just where to put the glue on the bottom. Take the bottom off. Trim the excess from the bow, and coat the battens, chines, bow, and transom with glue. Coat the bottom where it will come in contact with the above. The bottom is fastened in place with Anchorfast nails about every two inches at all battens, chines, bow, and transom. Countersink the nails and cover with wood dough.

The 1/4-inch plywood planking covering the bottom and sides of the sponsons are carefully fitted. The bottom planking extends over the sides except up toward the front where they butt. After the sides are carefully fitted the planking is glued and nailed in place with Anchorfast nails. Study the photos carefully for clarification.

Before removing the hull from the jig, carefully sand down and give the bottom and sponsons two coats of varnish for now. Place the hull right side up on level supports. Once again the hull is leveled and secured so it won't get out of shape. Fasten the middle deck braces in place with glue blocks. All deck battens are glued and nailed with Anchorfast nails to ribs and deck supports. The inside of the boat is given 3 coats of varnish. This is a time-consuming project.

The 1/8-inch plywood decking is glued and nailed in place with Anchorfast nails

from Rib No. 3 to transom, but not to the middle deck battens. The dashboard and floorboard are screwed in place, using glue on the dashboard and coaming strip.

The fabric deck is next, and is a lot easier than it looks. It takes me 45 min. to put it on and give it one coat of dope. I use light airplane fabric, but a good grade of muslin could be used. You start tacking in place with a small copper carpet tack, at the top center. At the opposite point at the bow, you stretch tight and put another tack. The next tack is in the middle of one side halfway between the first two tacks, and then another in the middle of the opposite side. Stretch and tack. At this point you have four tacks in place forming a cross. The next four tacks go between the ends of the cross. Each time stretch and tack. Repeat the process until you have the tacks about 1 inch apart. Trim off the excess cloth and apply about seven coats of dope. Do this in a well ventilated room. Give the last coat a good day to dry. Then paint with two coats of a good boat enamel. The whole boat gets seven coats of varnish. After you have wet sanded the bottom well, you are ready for the last coat. Hang the boat from over head and varnish the last coat from underneath; this will give you a real dust free bottom.

Hardware and fin are next. The fin is

**WETBACK** all set to go, being idled out for her first test run.



## BILL OF MATERIALS

### BRONZE, MONEL, or EVERDURE FASTENINGS

- 1 gross of  $\frac{7}{8}$ " no. 8 flathead wood screws
- 1 gross of  $1\frac{1}{4}$ " no. 8 flathead wood screws
- 4 dozen of  $1\frac{1}{2}$ " no. 8 flathead wood screws
- 2 lbs. of  $\frac{3}{4}$ " no. 16 Anchorfast nails 950 to lb.
- $\frac{1}{4}$  lb. of 19 gauge wire brads

### PAINT PRODUCTS

- 5 lbs. of Weldwood glue
- 1 lb. of Wood Dough or similar surface filler
- 1 gal. of Spar varnish
- $\frac{1}{2}$  gal. of clear Nitrate Dope
- $\frac{1}{2}$  pint of boat Enamel (color to suit)
- 50" by 60" Muslin or Aircraft wing fabric

### HARDWARE

- 1 Steering wheel
- 1 Piece of steering rope 24' long
- 1 Safety throttle
- 1 Bowden throttle cable 5' long
- 1 Racing fin for class B
- 2 Rear snap pulleys, with snap swivel
- 2 Steering rope anchor straps
- 2 Forward steering coaming pulleys
- 2 Cable clamps
- 1 Aluminum bow handle
- 2 Aluminum stern handles
- 2 12' lengths of  $\frac{1}{2}$ " half round aluminum

### PLYWOOD

- Decking 1 sheet of 3 ply waterproof plywood  $\frac{1}{8}$ " x 4' x 7'. Bottom, non-trip chines, sponsons,

girders, gussets rib No. 1 transom and flooring  
3 sheets of 5 ply waterproof plywood  $\frac{1}{4}$ " x 4' x 8', or 2 sheets  $\frac{1}{4}$ " x 4' x 12' Transom 5 ply waterproof  $\frac{3}{4}$ " x 14" x 14".

### SITKA SPRUCE

- Sheers—1 piece  $\frac{3}{4}$ " x 1" x 10'
- Bow piece—3 pieces  $\frac{1}{4}$ " x  $\frac{3}{4}$ " x 12'
- Chine—2 pieces  $\frac{3}{4}$ " x 1" x 10'
- Battens—4 pieces  $\frac{1}{2}$ " x 1" x 10'
- Bottom stringers—2 pieces  $\frac{1}{2}$ " x  $1\frac{5}{8}$ " x 5'
- Bottom stringers—2 pieces  $\frac{1}{2}$ " x  $1\frac{5}{8}$ " x 3'
- Deck battens—4 pieces  $\frac{3}{8}$ " x  $\frac{3}{4}$ " x 10'
- Deck battens—7 pieces  $\frac{3}{8}$ " x  $\frac{3}{4}$ " x 4'
- Deck braces—1 piece  $\frac{3}{4}$ " x  $\frac{3}{4}$ " x 4'
- Deck coaming battens—2 pieces  $\frac{1}{2}$ " x  $\frac{5}{8}$ " x 7'
- Deck beams glue blocks, etc. — 1 piece  $\frac{3}{4}$ " x 6" x 6'
- Frame No. 2—1 piece  $\frac{5}{8}$ " x 2" x 4'
- Frame No. 3—1 piece  $\frac{5}{8}$ " x  $4\frac{1}{4}$ " x 5'
- Frame No. 5 and No. 6—1 piece  $\frac{3}{4}$ " x  $1\frac{5}{8}$ " x 8'
- Transom—1 piece  $\frac{3}{4}$ " x 9" x 4'
- Sponson main beam—2 pieces  $\frac{3}{4}$ " x 3" x 5'
- Sponson chine—2 pieces  $\frac{3}{4}$ " x 1" x 4'

### HONDURAS MAHOGANY

- Frame No. 4—1 piece  $\frac{1}{2}$ " x 7" x 60"
- Sponson afterplane—1 piece  $\frac{3}{4}$ " x 8" x 12"
- Fin brace dash and dash beam — 1 piece  $\frac{1}{2}$ " x 7" x 5'
- Coaming strip— $\frac{1}{4}$ " x  $\frac{3}{4}$ " x 6'

off center to the left 4 inches and the back of the fin is 28 inches from the transom.

To get your racing number join the American Power Boat Association, 700 Canton Ave., Detroit, Michigan. Enclose in the letter a description of your boat and motor; the A.P.B.A. will want to know the make, model and serial number.

Motor angle and height are very important for racing and a motor  $\frac{1}{8}$  inch too high or low has lost many a race. A Merc motor should run best on the second notch with this boat. Transom height, depending on prop, is around 14 inches. The transom on Wetback is  $13\frac{1}{2}$  inches high. You use shim sticks to jack the motor up or down. A marine speedometer is handy to have while making these adjustments. At present I find the stainless steel Kaminc prop is the best. Your best speed is only determined through methodical testing. In order to tell what results you obtain from your changes, make only one alteration at a time. I always run my motor with a full butterfly. In case of a flip it's much

safer for you and the other drivers, and will save you from a blown motor.

### WETBACK AS A "D" HYDRO

For those who wish to make Wetback into a "D" hydro, I have included scales for ribs, girders, etc. (see plans box, below). This will make her 20 per cent larger. The framing should be 25 per cent heavier, but the decking and planking is the same thickness as the "B", "C". All the construction remains the same. Keep the motor mount on the transom  $13\frac{1}{2}$  inches high. •

### LARGE SCALE PLANS

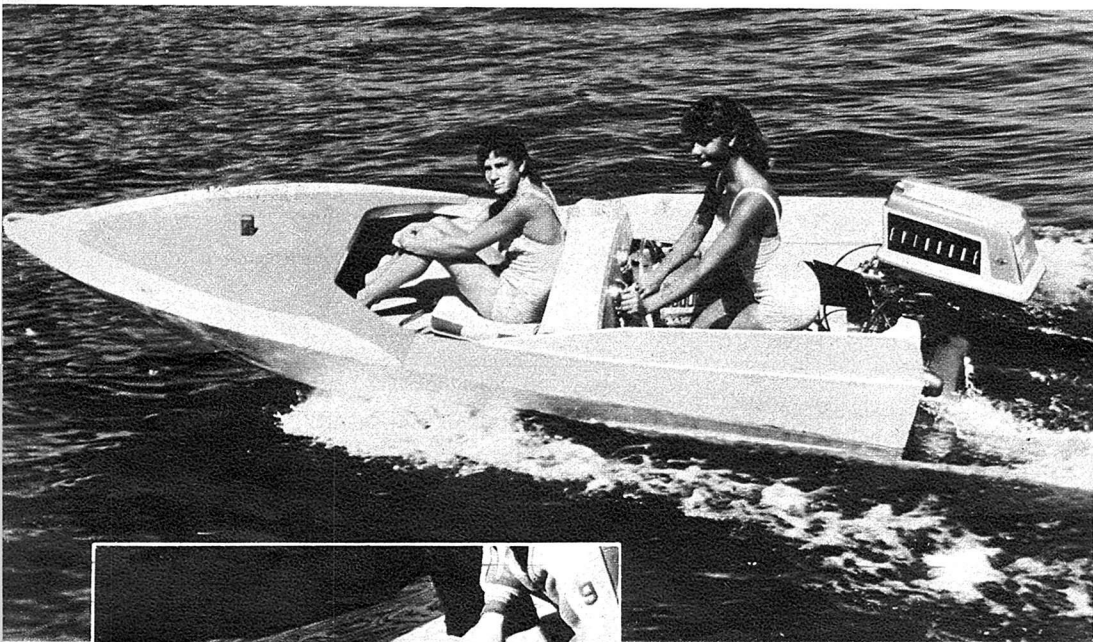
with full-sized rib drawings (plus 6 colorful decals) are available for building this boat. These are \$8 post paid. Order from Hal Kelly's Plans, P.O. Box 2095, Fort Pierce, Florida. Specify Plan FB-Wetback.

How To  
BUILD  
**20**  
BOATS

# HUSTLER

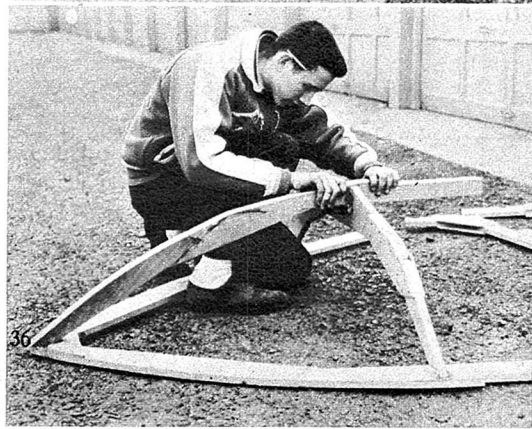
By Henry Clark

Speedabout is low in cost, high in performance.



UNIQUE 11-ft. outboard, above, speeds along, powered by an 18-hp mill. Will take up to 35, does 24 mph with the 18.

THERE ARE only three ribs to assemble, plus a transom, stem and bow harpin. The planking needs little bending.



SETTING UP stem, rib No. 1 and jigsawed bow harpin prior to attachment to jig. These make building easier.



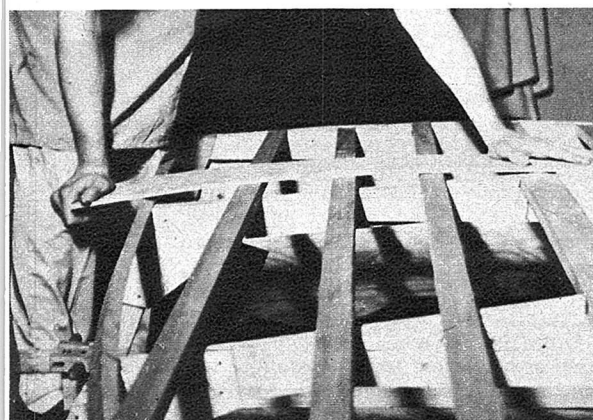


**ON JIG** extra ribs and transom quickly receive chines, sheer and keelson (above).

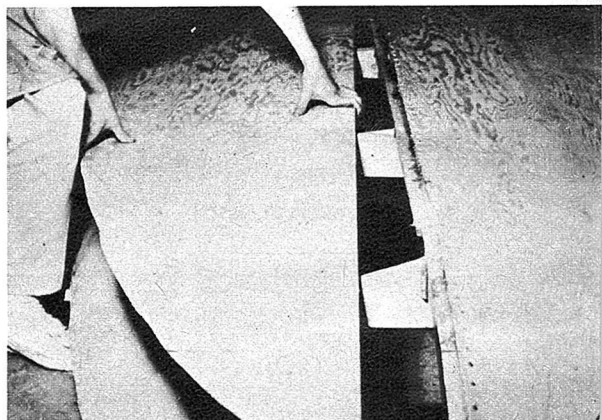


**SIDE PANELS** are screwed into place after carefully dressing frame to receive them.

**FAIRING STICK** bends over battens to test bevels of chine. File to correct.



**BOTTOM PANELS** are glued and screwed into place, butting along center of keelson.



**F**OR THE MAN or boy who wants the action of the racing gang, at a much lower cost and with easier construction, this boat was designed. After some months of creaming around in my 9-ft. Bubbles, one boy asked for a faster job, one which could carry a few friends along and still go car-top if necessary. With this in mind, the layout yielded a hull as simple as Bubbles', but far roomier, sturdier, and faster. The cost runs from 65 to 75 bucks depending on where you live.

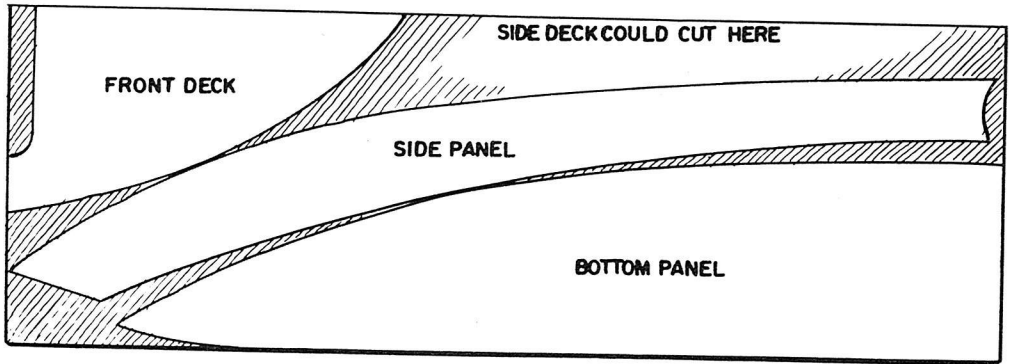
Transom is uniquely braced to take up to 35 hp if the driver knows his stuff, but this driver was content with an 18 hp Evinrude, with remote controls. This drove the boat 30 mph average with an all-purpose prop. Even with a smaller 10 hp on, we clocked 24 mph on our Aqua Meter.

To the looks of a hydro was added the rakish fins which impart high freeboard and ward off splash. And though the ribs are simple, straight ribs, the bottom is

semiround, giving a soft ride and rolling turns. Center wheel dash unit is also front seat back rest. Gas tank goes in front when going solo.

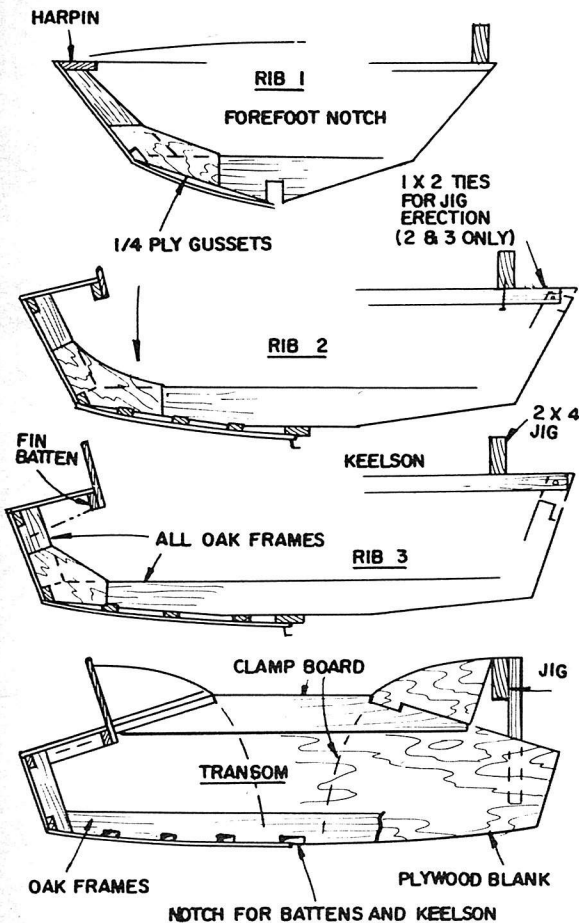
Construction is easy in view of the rugged hull obtained, and the test model was put together by a teen boy and his shop teacher, who had never built a boat. There are only three ribs to assemble, a transom, stem, and bow harpin. The plywood needs little bending on this frame, making for building ease. First thing is to obtain the rib stock. Lay the pieces out on the full size drawings, and assemble with gussets and glue over the joints, then notch.

The 1/4-inch ply transom blank is laid out, and its oak frames glued to it, then screwed on from the back. Notches for battens and chines are cut first before gluing to transom. Motor clamps come later. Stem is cut to form on band saw, or with many passes on a table saw, and joined to forefoot with web at the joint.



**TWO 1/4" X 4' X 14' WELDWOOD MARINE PLYWOOD YIELDS ALL PANELS**

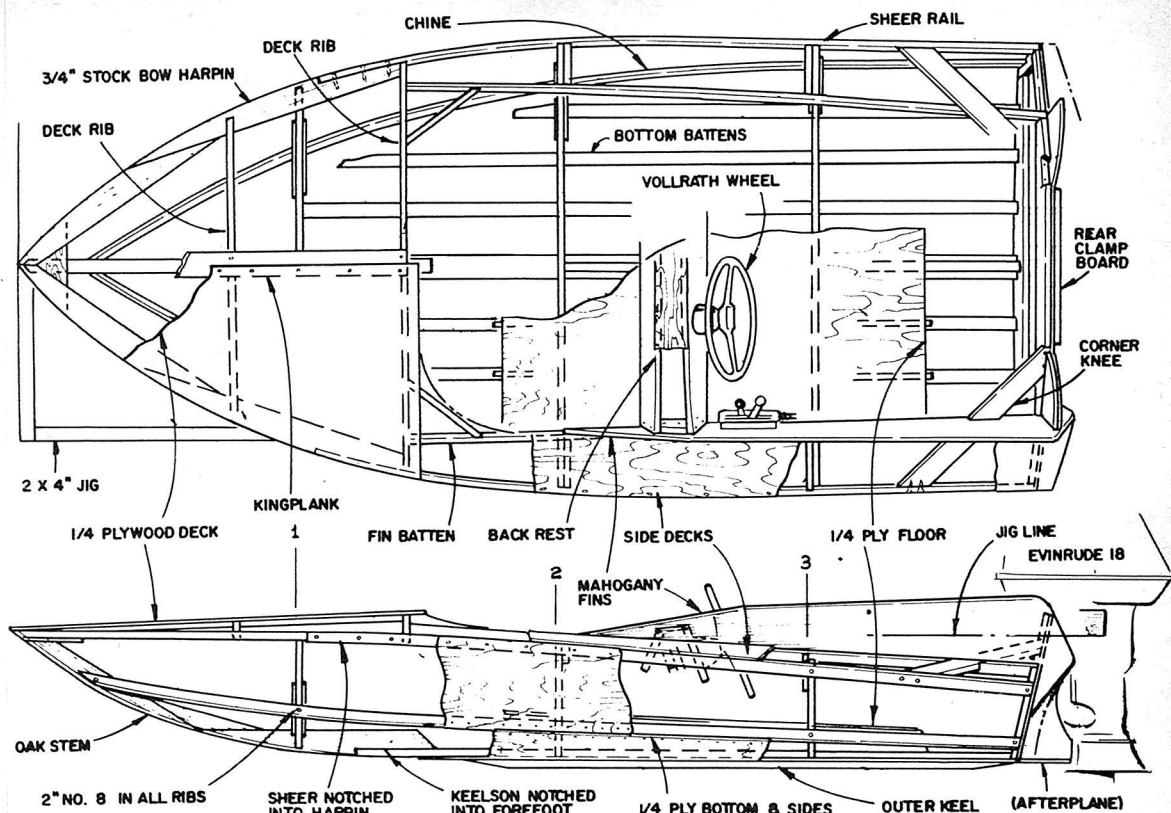
**LAYOUTS SHOW RIB SIMPLICITY (NOT TO SCALE)**



Bow harpin is simple fir stock, again formed with band or table saw to curve. Two halves are joined with plywood gusset at front. These few simple parts are now set up on the jig, which is two 2 by 4 lengths laid endwise on the ground (or on blocks if you wish). Stand Rib 1 on harpin, and stem into the notch, with two screws into the harpin front. Set this assembly onto the jig, securing with two nails through harpin into jig. Position squarely.

On Ribs 2 and 3, screw a 1x2-inch tie strip across their tops to support them on the jig. Stand transom at rear, and lay the keelson into all its notches, right to transom. Then secure transom at its 5-inch incline, with braces down to jig. Space ribs and get them 90 degrees to keelson, then run screws through keelson into each rib and transom. Use glue. Sheer rail goes on next by screwing it to harpin edges first, horizontally, then springing back into other rib notches and transom, with a screw in each. Chine rail goes on by screwing to transom notch first then bending down past notches to stem. Bevel this end for lay against stem side, and screw it here about 1/2 inch back from edge. This 1/2-inch area will be beveled for planking. Before cutting any plywood for fitting, plane a bevel along the chine creating a flat area for the bottom plywood to lay on.

To help here, lay the bottom center batten in position across the ribs, then bend a "fairing" stick (any narrow piece of flexible wood) over this batten to touch the keelson, and the chine. Plane away the chine until this stick proves out a flat area. At the harpin sides, considerable angle must be planed for good side panel contact.



Now cut the side panels because they go on first. Cut them out in either of two ways. One, using the diagram on the large scale plans, or by clamping the entire ply panel on the hull, with one edge down keelson's center line. Scribe outline of bottom panel, and cut out, leaving the side panels free for scribing. These are clamped on, drilled for screws every 2 inches at chine, and 4 inches at sheer, trimmed, removed, glued up with Weldwood resin glue, then replaced with a few clamps and pilot screws. Be sure panels lie in good contact by again using the fairing stick. If only the rear portion lies correctly, cut the 2 by 4 back to under the harpin. After the side is on, plane chine edge to angle already planed on the frame chine. Now add the other bottom battens, notching them about  $\frac{1}{2}$  inch into ribs, or as shown on the rib art. With the center one raised, and two part-way down, this accounts for the semiround bottom you will obtain, a bonus for little effort.

Bottom plywood must be screwed to all these battens, as well as to keelson, chines, and transom. Lay bottom panel in place,

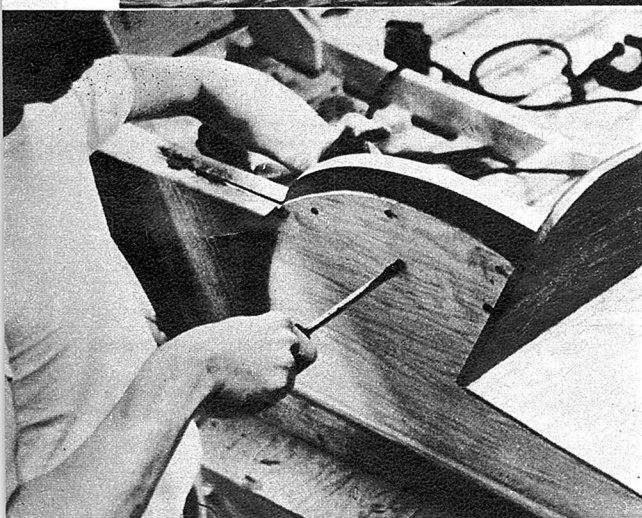
clamped to keelson center line, and put in a few pilot screws. Plane away edges to conform to sides and stem, and drill all other holes, without countersinking, every 2 inches along the keelson, chines, transom, and stem; every 5 inches along the bottom battens. Remove panel, swab on creamy Weldwood mix along all drilled surfaces, replace plywood with the pilot screws, then proceed to drive in all other  $\frac{7}{8}$ -inch No. 7 screws, driving them flush with the plywood surface. Countersinking leaves too many pits to fill, and weakens the holding power of the screws.

Bottom extends some 5 inches aft of transom as afterplane. This may remain or be cut according to porpoising action later. When gluing up bottom lay  $\frac{1}{2}$ -inch-wide strips of linen into the glue along chines, outside screw holes, and along transom, which will help spread the glue better. Add the short outer keel now, or later. Now you can flip the hull and remove the jig and the rib ties. Now you will see the fine, safe beam your small hull has. Cut and round the deck dash first, and install it to help keep the rib spread. Next cut and





THOUGH SMALL, 11-ft. Hustler easily carries a passenger or two while towing a water skier.



SCREWING FIN brace to transom, left. Note rear clamp board on transom and bottom after-plane.

## BILL OF MATERIALS

### WHITE OAK

$\frac{3}{4}$ "x5"x30"	Rib-1
$\frac{3}{4}$ "x3"x78"	Rib-1-Transom
$\frac{3}{4}$ "x2 $\frac{1}{2}$ "x70"	Ribs-Transom
$\frac{3}{4}$ "x4"x97"	Ribs
$\frac{3}{4}$ "x3"x52"	Knees
2"x3"x72"	Stem
1"x2 $\frac{1}{2}$ "x60"	Sister Keelsons

### MARINE PLYWOOD

$\frac{1}{4}$ "x20"x60"	Transom Blank
$\frac{1}{4}$ "x24"x48"	Gussets
$\frac{1}{4}$ "x4"x12' (2)	Planking
$\frac{1}{4}$ "x4"x5'	Floor

### PHILIPPINE MAHOGANY

$\frac{3}{4}$ "x2 $\frac{1}{2}$ "x8'	Keelson
$\frac{3}{4}$ "x5"x11'	Ripped for Chines-Battens
$\frac{3}{4}$ "x10"x8'	Sheers-Battens
$\frac{3}{4}$ "x4"x36"	Transom Clamp

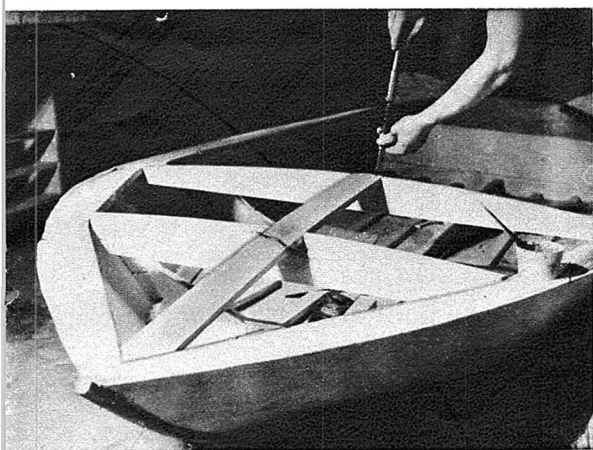
$\frac{3}{4}$ "x7"x88"	Wheel Dash-Rest
$\frac{3}{4}$ "x15"x20"	Rear Motor Clamp
$\frac{1}{2}$ "x12"x9'	Fins

### FIR-SPRUCE

$\frac{3}{4}$ "x3 $\frac{1}{2}$ "x12'	Bow Harpin
$\frac{3}{4}$ "x2"x14'	Fin Battens
$\frac{3}{4}$ "x5"x60"	Deck Dash
$\frac{3}{4}$ "x2"x52"	King Plank

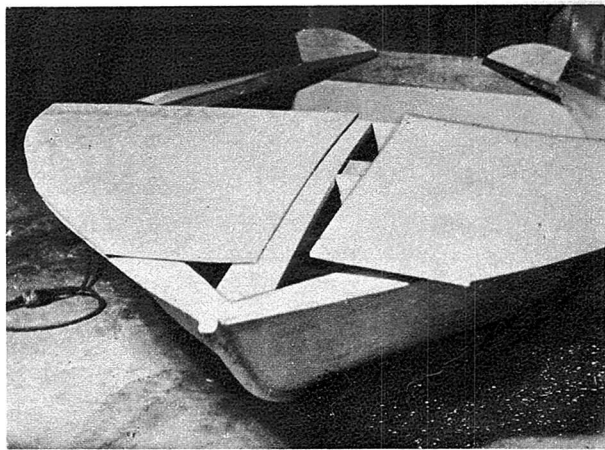
### SCREWS

$\frac{7}{8}$ " No. 7	Brass (4-Gross)
$\frac{3}{4}$ " No. 6	Brass (2-Dozen)
$\frac{1}{2}$ "	Galv. Brads 1 Lb. (For Gussets)
2" No. 8	Galv. (3-Dozen)
2" No. 10	Galv. (1-Doz.)
Weldwood Resin Glue 3 Lb.	



**KINGPLANK** is shown being screwed down to dash board. "Fair" for deck planking.

form the top motor clamp board, and screw in place with glue. Notch it first to receive the two corner braces, or knees, which are made now and screwed in to notches and to sheer rail with 3-inch No. 10 screws, pre-drilled. This unique bracing makes a very strong transom, and permits use of heavier motors. Now add the two fin battens reaching from dash to transom, notching under the corner knees. Pull these into curve with two braces over to sheer. Plane the tops of these battens to conform to rake outward of the side decks. Test for flatness with stick. Now add the side decks before fins, cutting from the plywood scrap area. One-half-inch mahogany would be impressive, but also somewhat heavy, as we learned from Bubble. Secure decks with  $\frac{3}{4}$ -inch No. 6 screws every 4 inches. Cut the deck out last, after adding the center kingplank. If deck material is short, butt with other scrap, or improvise to taste. Before putting down deck, you might apply paint, or other preservative to the bare insides for longer weathering resistance. The fins are cut from  $\frac{1}{2}$ -inch mahogany now, shaped, and clamped to the batten's faces after applying glue. Note that fins rake outward to some 90 degrees to the decks, and offer more cockpit room and a good splash fence. You cannot keep water out without them, as aft end sets low in hydro fashion. Wheel dash is now added along with back rest and plywood topping. These secure to small blocks glued to inside faces of fins. Drill for wheel drum and in-



**FRONT DECK** butts on kingplank, with single piece to stem (alternative on p. 38).

stall Vollrath Viking wheel and cables with only four pulleys. For floor, plywood lays on fir blocks glued atop the bottom battens. Secure plywood to these. Do not sand the outside of the hull as it is pre-sanded. Only sand where your glue oozes, etc. Add Firzite filler and paint with exterior enamels of your choice. Add rub rails of oak, or an aluminum bead. Vollrath stainless steel hardware finishes it. Lights are optional. Evinrude Simplex remote controls, 7 ft. long, allow forward facing and control, so you can kneel while speeding along in your new hot rod, flying low, and even pulling a skier or two. •

## SPECIFICATIONS

Length .....	11 ft.
Beam .....	5 ft.
Depth .....	21 in.
Freeboard .....	18 in.
Weight .....	200 lbs.

## LARGE SCALE PLANS

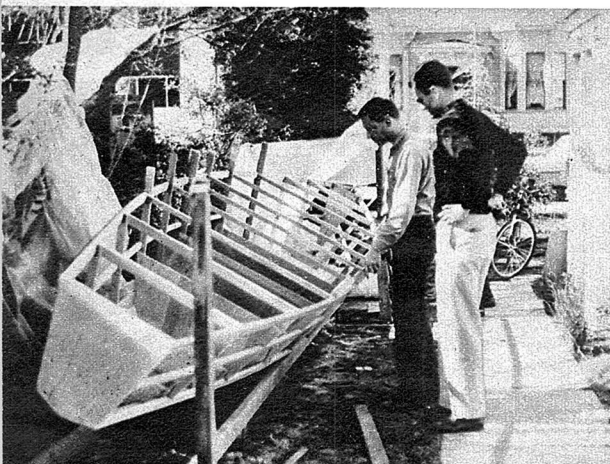
with full size half ribs are available for building this boat at \$5.00 per set. Send orders to Henry Clark, 36 Highway Drive, Dumont, N. J. Specify FB-HUSTLER.

# How To BUILD 20 BOATS

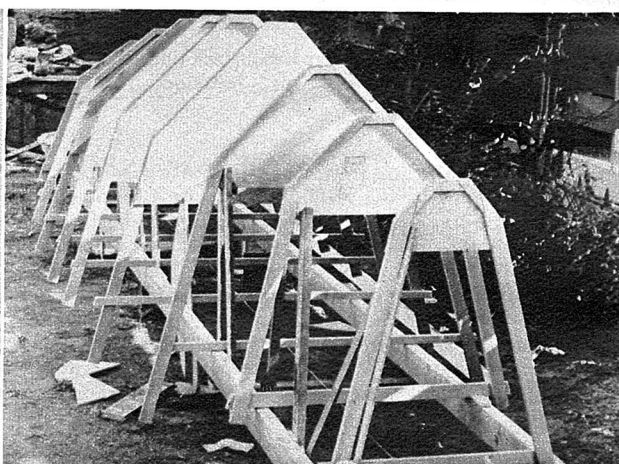
## NUGGET

By Arthur Piver

This 24-ft. trimaran can be built at rock-bottom cost.



**CENTRAL HULL** framing may be built in the back yard. False transom can be added.



**STRONGBACK** holds frames in line until bottom planking and stringers are in place.

**T**HE APPEARANCE of a trimaran on these pages is timely, for it looks as though this type craft is destined to alter the appearance of the boating scene. It has proven to be not only fast and safe, but inexpensive and easy to build as well. It possesses the ideal sailing characteristics of great stability with light weight.

The 24-foot Nugget, shown here, is easy to build, being almost all sheet plywood. It was designed especially for the amateur craftsman and has numerous building short cuts. There are no critical bends, and the construction has been simplified to the point where no lofting is necessary. A table of offsets is not even required.

Here we have a boat which can sail at a speed of twenty knots (it is also

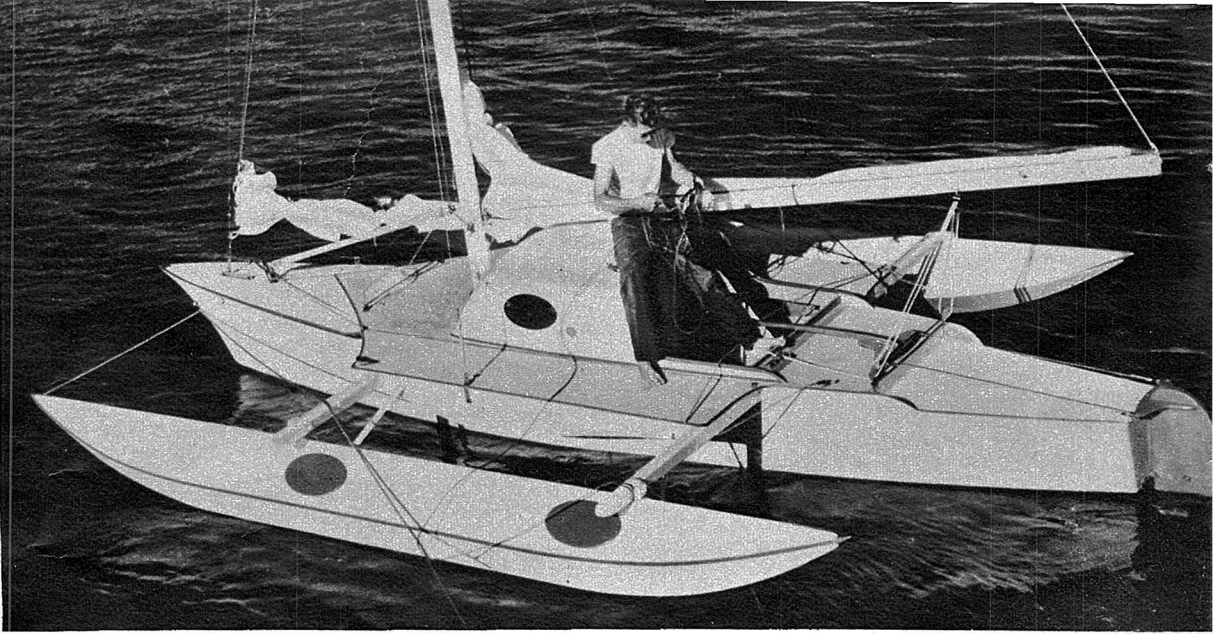
extremely fast in light airs), is apparently seaworthy enough to go around the world, and can be built, complete, for as little as \$600 (wood alone amounts to about \$300). This \$600 includes cost of the plans (\$60), and even sails—if you make your own.

The boat is easily trailed, as the side decks and floats fold compactly. It can sleep four people on short cruises, and the 14-foot beam provides loads of useful deck area. Draft (board up) is only 17 inches, so it is easy to beach.

### FRAMES

Frames of the central hull are two-part frames, in that the lower section is of  $\frac{3}{8}$ -inch plywood, to line shown on frame plan, with upper frames of  $\frac{3}{4}$ x2 wood.





**RUGGED** enough for ocean voyages—this boat traveled from San Francisco to Acapulco.

Bulkheads are found at either end of the cockpit. These are stations 5 and 9. Bulkheads are solid  $\frac{3}{8}$  ply, with wood all around— $\frac{3}{4}$ x2 on the sides, and  $\frac{3}{4}$ x1 glue strips on the lower edges and across the bottom.

If desired, the transom can be notched, and a false transom added later for appearance sake. This false transom can be definitely curved, which looks better than a flat transom.

Frames are shown  $\frac{1}{2}$  size on the frame plan. Measure the distances and the angles and double the distances to get the full size frames.

It will be noted that the lower angle of all of the forward frames is the same (45 degrees) which simplifies matters.

### STRONGBACK

After the frames and bulkheads are assembled, and notched for chine and deck stringers, they are placed *upside down* on the strongback, which is a rigid structure which holds the frames in line until the bottom planking and the various stringers are in place.

The strongback can be made of 2x4s, on edge, about 2 feet apart.

The top surface of the strongback must be at least 6 inches off the floor, to allow room for the upper frames which will support the cockpit coaming and deckhouse.

### KEEL

The  $1\frac{1}{2}$ x4 keel is beveled on the two bottom edges, as shown on the plans. The angle is 45 degrees on each side, which fits

all the frames through station 6. The angle then flattens out aft, as shown on the plan.

The  $\frac{7}{8}$ x2 chine stringers have a single bevel, which is cut at a 30-degree angle.

The keel is fastened to each frame with glue and a nail through each side of the keel after being bent down over the frames. Be sure the keel is held down securely until after the bottom planking is on.

The bottom of the keel is later rounded off, after the bottom planking is on.

### BOTTOM PLANKING

The bottom planking ( $\frac{1}{4}$  inch) is then put on, starting from the stern.

This makes the planking ends come between the frames. Butt blocks can be made from  $\frac{1}{4}$ -inch ply, extending several inches on each side of the joint. We find it easier to fit butt blocks after the planking is on and the glue set up, as then the butt blocks can be fitted closely to the keel, chine, etc. Wipe excess glue from the joint area before it sets up, leaving a clean space for the butt blocks.

When nailing (use a nail about every 2 inches) the planking at the chines and keel, keep the nails well back from the edges of the plywood, as these edges will be rounded off later.

After the bottom planking is on, the hull can be removed from the strongback.

### DAGGER BOARD CASE

The dagger board case is next installed. Do NOT cut the dagger board slot before the bottom is planked, or the keel will lose its fair curve.

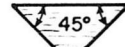
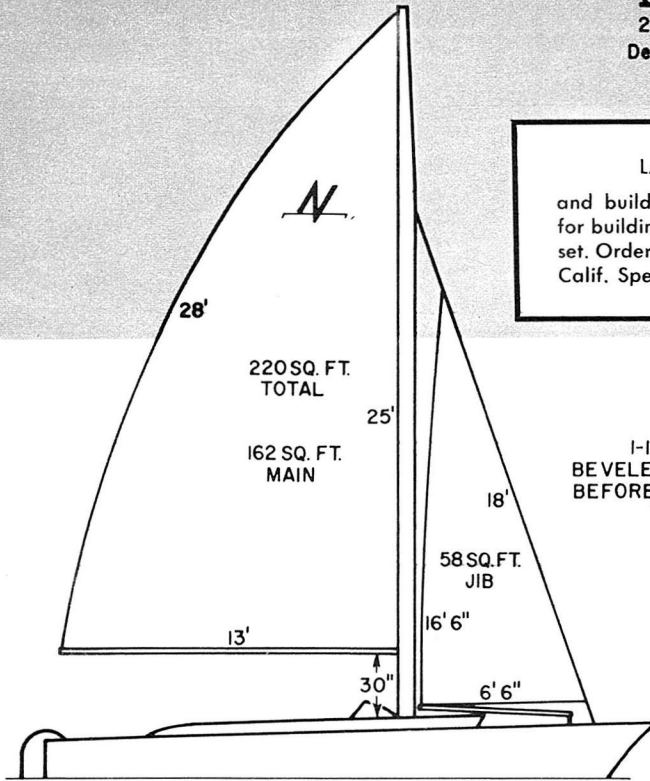
# NUGGET

23' 8" X 14' TRIMARAN

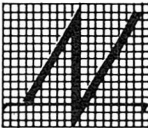
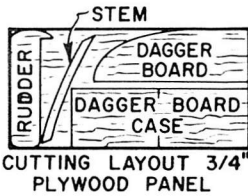
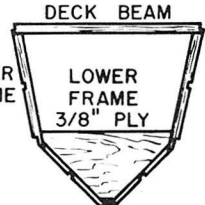
Designed by Arthur Piver  
Mill Valley, California

## LARGE SCALE PLANS

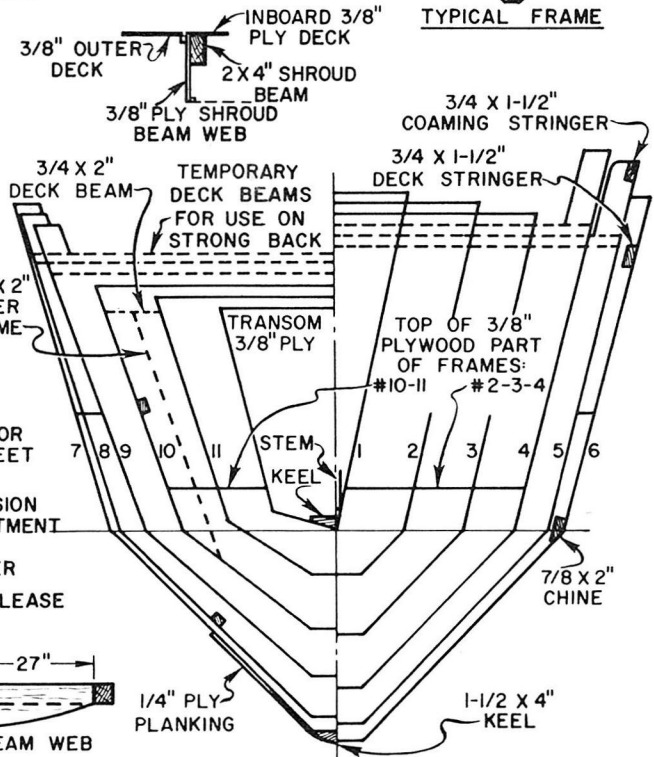
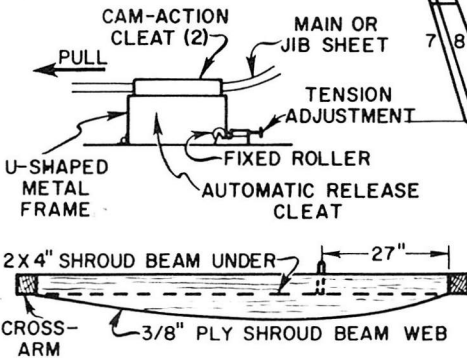
and building instructions are available for building this boat. These are \$60 per set. Order from Arthur Piver, Mill Valley, Calif. Specify FB-NUGGET plans.



1-1/2 X 4" KEEL IS BEVELED ON BOTH SIDES BEFORE BEING FASTENED TO FRAMES



SAIL INSIGNIA 1" SQUARES



## HULL PLANKING

Before planking the hull sides, be sure you have bolted a metal strap (1x $\frac{1}{8}$  inch) through the lower part of the stem. This strap transfers the pull of the jib stay from the deck to the stem and keel.

Sides of the hull are planked with  $\frac{1}{4}$ -inch ply, after the chine edges of the bottom planking has been planed flush with the upper faces of the chine stringers.

## DECKHOUSE

Deckhouse is made of  $\frac{1}{4}$ -inch ply, and is usually easier to install after crossbeams are fastened in place.

Sides of the deckhouse angle outward and forward, acting as a stopwater.

## CROSSARMS

Fir crossarms (4x4) are 14 feet long, with a hinge joint 3 feet 10 inches out from the center line of the main hull. It is easier to assemble the hinge hardware on the arms before cutting the arms at the hinge line.

Crossarms are glued and nailed into the adjoining bulkheads, and are strengthened with metal straps ( $\frac{1}{8}$ x1 inch) bolted with  $\frac{5}{16}$ -inch bolts through the crossarms and through the lower part of the bulkheads, as shown on the plans.

Hinges on top of the crossarms are 10-inch galvanized strap hinges, with a tab welded on to cover the ends of the shroud beams, as shown on the plans. Two pairs of hinges are needed.

## SHROUD BEAMS

Shroud beams are 2x4-inch fir, stiffened on the outboard side by a web of  $\frac{3}{8}$ -inch ply, as shown on the plans.

At the point (27 inches aft of the rear face of the forward crossbeam) where the chain plates are indicated, a thin wedge of wood is fitted between the shroud beam and the shroud beam web, on each side of the chain plate.

This will allow the passage of the U-shaped chain plate (1 $\frac{1}{4}$ x $\frac{1}{8}$  SS) upward through the deck, where the upper ends are joined to the shroud (side stay) turn-buckles.

## FLOATS

Nugget's floats are diamond shaped as mounted on the crossarms but are actually built as boxes for simplicity.

The ends of all of the  $\frac{1}{4}$ -inch plywood pieces comprising the floats are cut to the same shape, as shown on the plans.

This may sound confusing, but as the floats are assembled it all works out. Each piece has a straight edge and a curved edge

—the straight edges go together to form the top of the floats; the curved edges go together to form the bottoms.

Finished floats are 19 feet 6 inches long, so two of the top pieces are shortened 6 inches and butted against the two remaining top pieces to achieve the length.

After the length of the bottom planking is determined, glue strips are fastened to it as shown on the plans. Transverse stiffeners ( $\frac{1}{2}$ x $\frac{3}{4}$  inch) are also fastened in place.

After final assembly of the floats, be sure to fasten splash guards on the inside leading edges of floats, as shown on plans.

The floats should not leak (theoretically), but some means of draining them should be used—a cork, for instance. A small piece of copper or brass tubing can be used for a topside air vent.

## RIGGING

Spreaders are 16 inches long, 61ST aluminum tubing,  $\frac{3}{4}$  inch OD, 16 gauge. Mast thru-bolts are  $\frac{3}{8}$ -inch stainless steel. Spreaders should fit thru-bolts closely.

To get diamond stays tight without turn-buckles, fit stays first over dummy spreader 4 inches shorter than regular ones. •

## BILL OF MATERIALS

### PLYWOOD (MARINE OR EXTERIOR GRADE)

Planking for hull—10 sheets  $\frac{1}{4}$ "x8'

Floats—5 sheets  $\frac{1}{4}$ "x10'

Decking—8 sheets  $\frac{3}{8}$ "x8'

Rudder, dagger board, stem,  
jib cleat brace—1 sheet  $\frac{3}{4}$ " ply

### LIGHT WEIGHT BOAT-BUILDING WOOD

Keel—1 piece 1 $\frac{1}{2}$ "x4"x22' beveled per plans

Chines—7 $\frac{1}{8}$ "x2" beveled per plans  
44 linear ft.

Deck, underdeck,  
coaming stringers— $\frac{3}{4}$ "x1 $\frac{1}{2}$ "  
120 linear ft.

Stringers side & bottom,  
lower frame facing— $\frac{3}{4}$ "x1" 130 linear ft.

Float glue strips— $\frac{7}{8}$ "x $\frac{7}{8}$ " 160 linear ft.

Upper frames, deck beams— $\frac{3}{4}$ "x2"  
70 linear ft.

Daggerboard case—1"x1" 8 linear ft.

### FIR

Mast—1 piece 2"x6"x28'

Boom—1 piece 2"x3"x13'3" (may  
be Spruce)

Cross arms—2 pieces 4"x4"x14'

Shroud spars—2 pieces 2"x4"x8'

Outside deck beams—2 pieces 1"x3"x8'





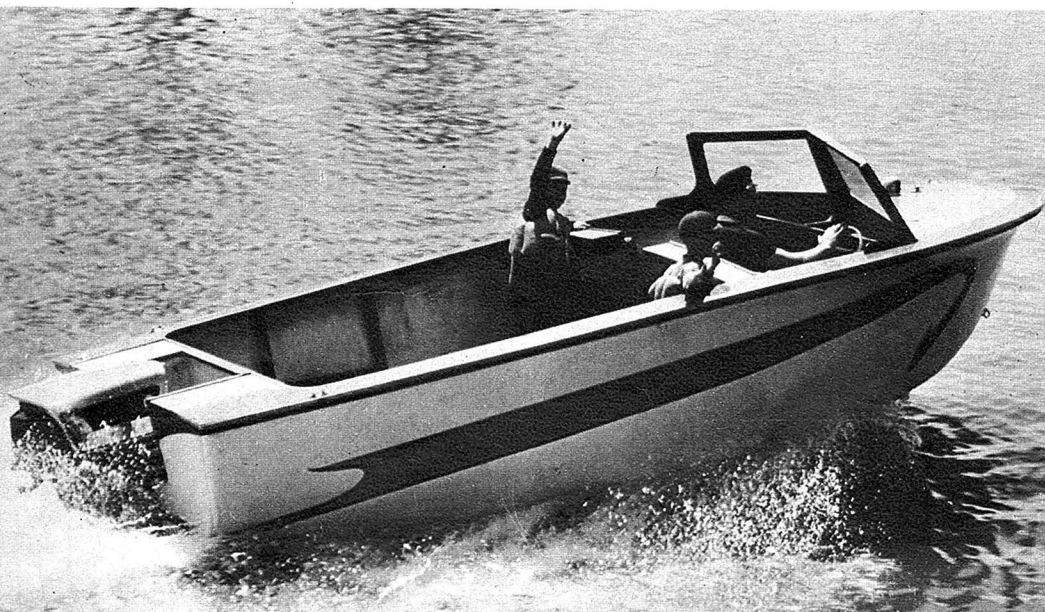


# How To BUILD 20 BOATS

## SKIMABOUT

By Normal Zempel

Plaster-finished mold shapes Fiberglas hull.



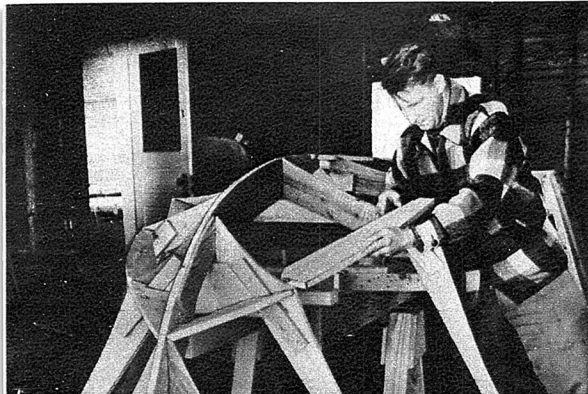
**D**ESIGNED and built for a family, Skimabout is as big a runabout as anybody could want. She's 17 feet with a 7-foot beam and has a 7½-foot cockpit behind the forward seats. What's more, there's plenty of depth from floor to gunwale so that you're always in the boat rather than halfway out.

With an eye to reduced maintenance, the hull is Fiberglas, laid up on an inexpensive mold made from lumber, lath and plaster. There are three layers, two of cloth with one of matte between. When the three are laminated with polyester resin they form a tough, leak-proof shell which is easily removed from the mold for rapid finishing of the boat.

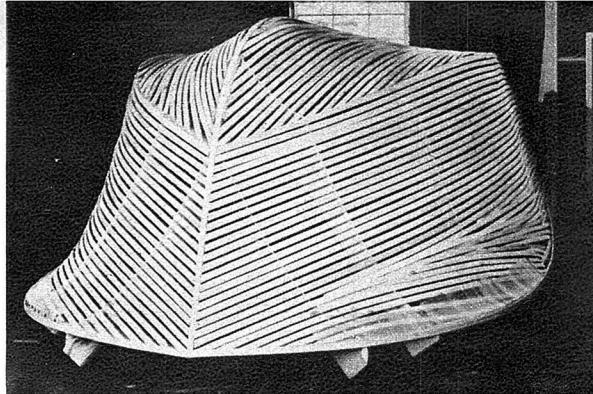
Construction is not difficult and begins with a full-scale layout of the plans on heavy, white paper. Working from the di-

mensions given in the drawing on page 51, and using the curve pattern given in the same drawing, each mold frame outline can be overlaid upon the other. Then it's easy to trace the outlines on ¾-inch seasoned pine and cut out the pieces with a band saw. The frame sections should be checked against the drawing. The sections are then joined with cleats, and crosspieces are nailed horizontally across the frames so that their top edges are 18 inches above the base line. These crosspieces will serve to mount the inverted frames on the mold frame jig. When the frames are assembled, a ¾x1¾-inch notch is cut in the center bottom of each for a keel strip. Then the stem is traced and cut out in the same manner as the frames and a ¾x4-inch cut-out is made at the bottom rear for the keel strip to fit into.





**PINE STOCK** is cut to chine and gunwale curves and fitted between the mold frames.



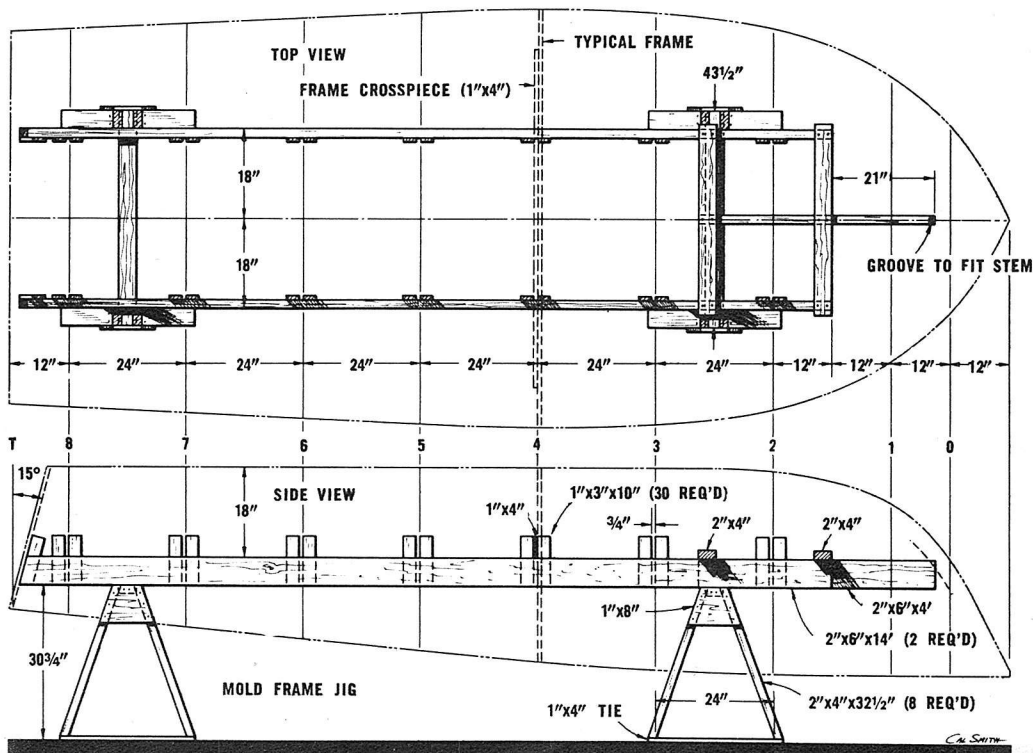
**LATH** tacked to framing completes wooden part of mold. They are  $\frac{3}{16} \times \frac{3}{4}$  in. strips.

The mold frame jig is shown in the drawing on page 49. When it's erected, the 1x3's nailed to the insides of the 2x6 longitudinals form slots into which the crosspieces on the frames fit. Frames one through eight are erected vertical on the jig and the transom is installed at a 15° angle. The stem is placed on a built-out projection which is exactly on the centerline. Using a square or a level, make sure that each mold frame is properly aligned and nail it in place. Then the keel strip can be fitted in and nailed.

Next, to make rigid chines and gunwales in the mold,  $\frac{3}{4}$ -inch pine stock is cut to the proper curves and nailed between the frames. This can be done by cutting

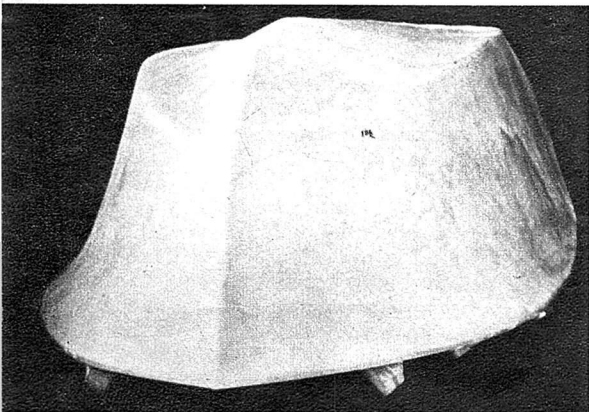
boards to fit between the frames and then tracing the curves by means of a flexible batten bent around the frames. The photograph at the top of page 49 shows a piece being fitted in after the curve has been traced and cut. Double check the alignment before proceeding with the lathing. If any member is out of line, the whole project will not be a success.

Our  $\frac{3}{16} \times \frac{3}{4}$ -inch lath was cut from  $\frac{3}{4}$ -inch pine boards, eight feet in length. Using one-inch brads, the lath was then fastened to the mold framing with no more than a quarter-inch between each strip. Start on either side of the keel and work out. Where the strips butt against the stem, a sharp knife can be used to cut the correct angle.

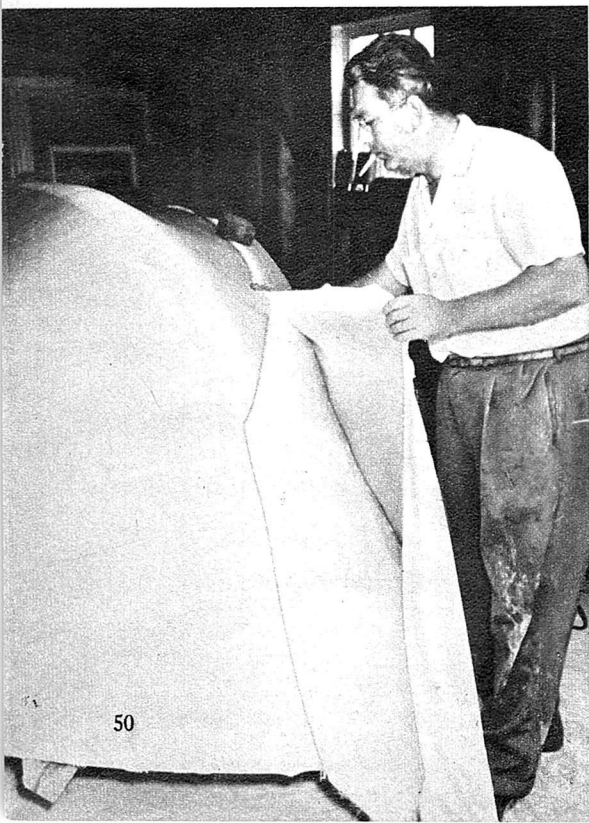




**THREE COATS** of plaster are used to get required thickness and smoothness in mold. Mold is complete when it's sanded smooth.



**LAST TWO** layers of cloth are applied together, inner one is matte, outer is cloth.



Because of the necessity to maintain smooth curves, do not attempt to twist the lath; let each piece curve naturally. Where spaces occur, they can be filled in with short lengths later. Where a joint is necessary, butt the lath on the center of a frame. You will not be able to lath the frames where the bow flares sharply near the gunwales; instead, cover this area with a wide mesh screening to provide a base for the plaster.

Three coats of plaster are required to get the thickness, line and smoothness you need in the mold. We started with a product called Lite-Mix and added a little water at a time to get enough plaster to last for an hour, no more. The mix should be just stiff enough to stand like whipped cream. With a trowel, start at the bow and spread it with a firm stroke. Do not press too hard or you'll cave in the lath and practically all the plaster will go through the openings. The first coat must lock between the lath and form a firm layer. When the plaster is firm, but not yet hard, run a wood float over it to provide a tooth for the next coat.

With the second coat, using the same mix, you establish line and smoothness of contour. You can employ a straight-edge about five feet long to help establish the line horizontally and vertically. On the compound curves, your eye will be your best guide.

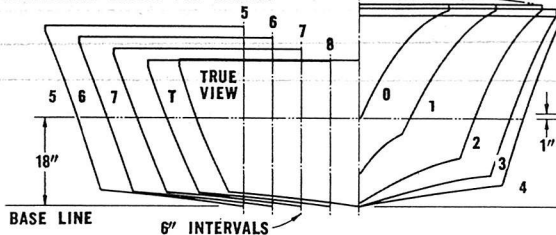
For the last coat, mix finishing lime with water and allow it to stand 24 hours. Then pour enough to half fill a three-gallon pail and mix in the right amount of plaster of Paris for the brand you're using. This mixture is applied immediately in a  $\frac{1}{8}$ -inch coat with a steel trowel. Smooth it out and, when it is completely dry, sand all the sharp edges. Any depressions, pinholes or cracks which remain should be filled with plaster of Paris.

The next step is to apply the mold release—a wax that prevents the resin from sticking to the mold. You can get it from your Fibreglas supplier. Apply it according to the instructions, being sure that no bare spots are left where the Fibreglas will contact the mold.

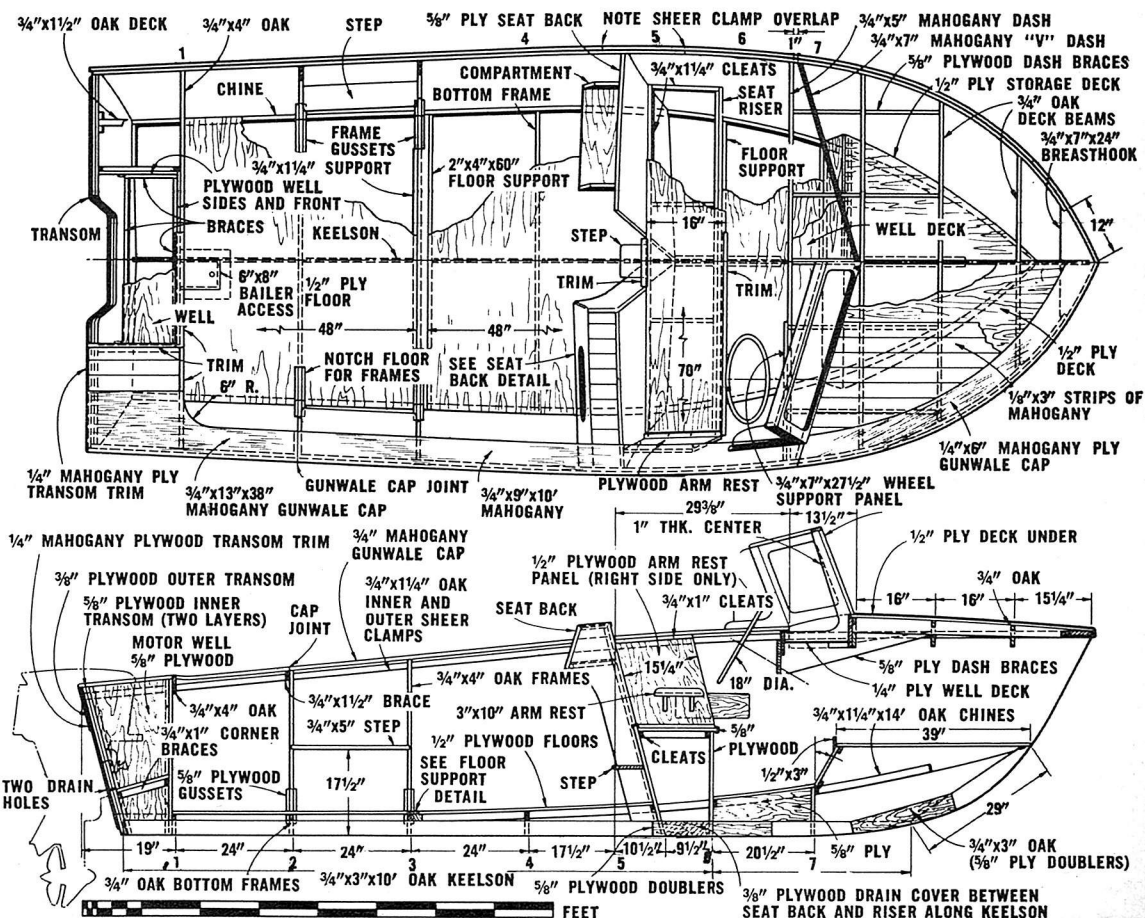
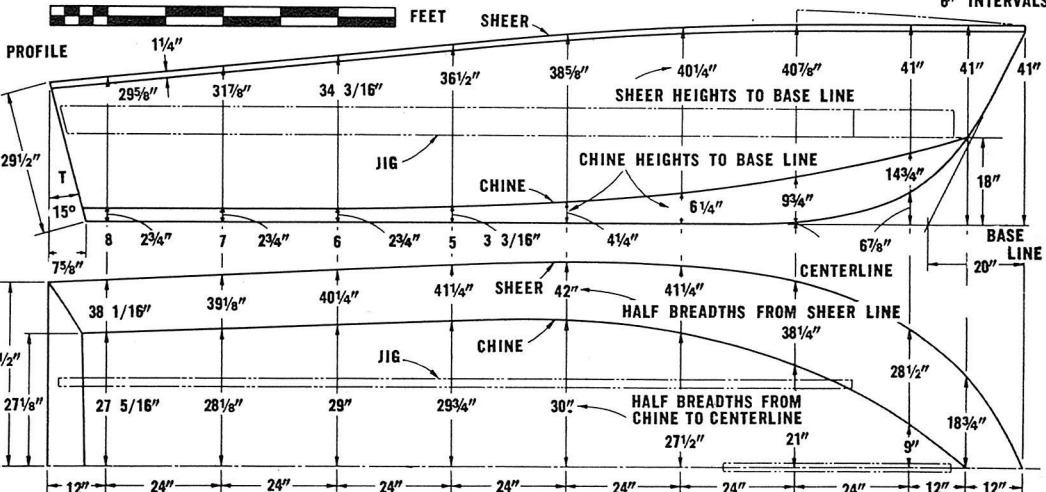
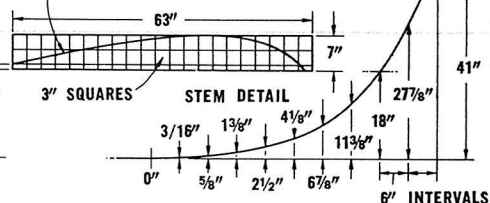
The first layer of Fibreglas cloth now goes on. Start fitting it along one half of the bottom, leaving an overlap of two to three inches at the keel and chine. Smooth out all the wrinkles with your hands, starting at the center and working toward the edges. You'll find it fairly simple to lay and trim. When you have prepared as large a section as you can handle, you're ready to start applying the resin.

Instruction for mixing the resin and the

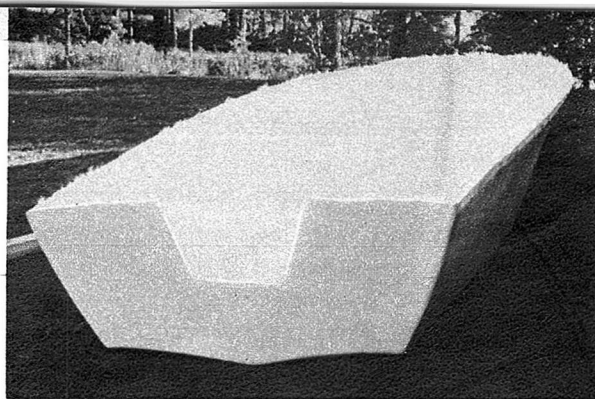
CENTERLINE SPACED FOR CLARITY



CURVE PATTERN FOR LAYOUT OF MOLD FRAMES (1/4" PLYWOOD)

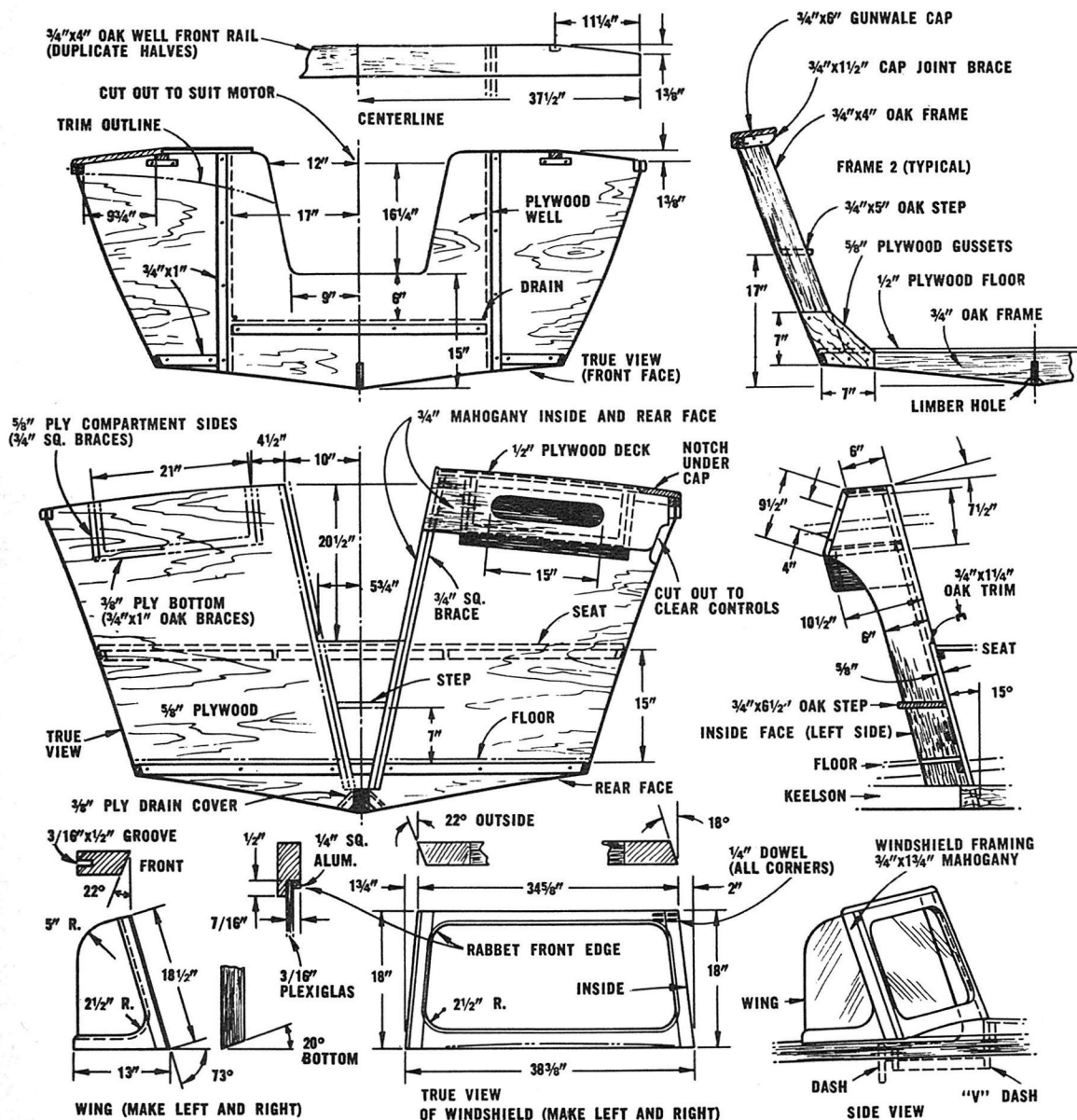


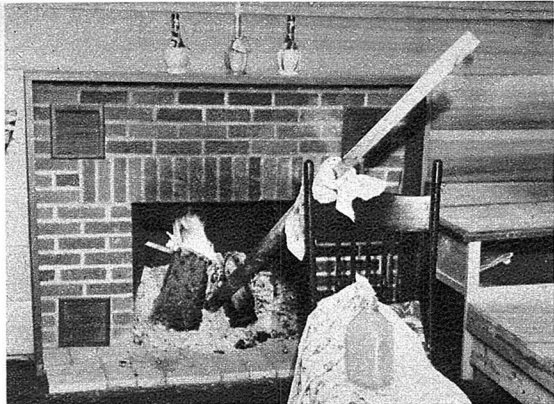




DISK SANDER is used to feather all overlapping edges of the glass cloth covering.

HULL after removal from the mold; prying and hammering break it free from mold release wax.

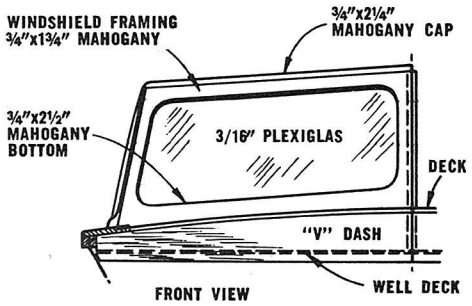
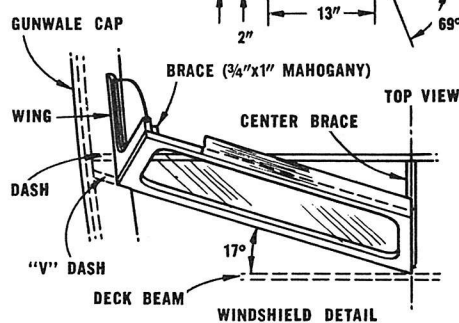
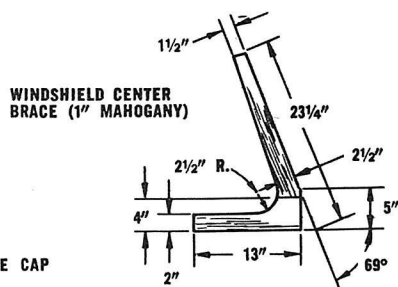
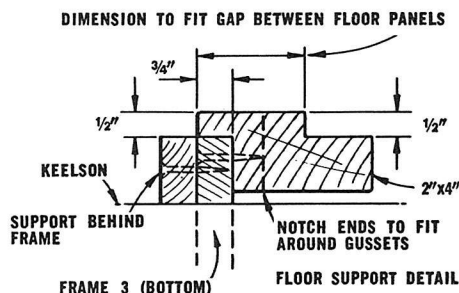




**STEAMING** in a length of pipe will facilitate the bending of the oak sheer clamps.



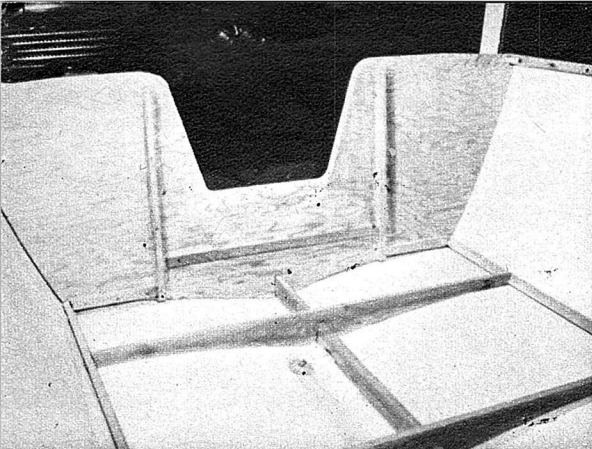
**INNER AND OUTER** sheer clamps are white oak, screw-fastened after steaming.



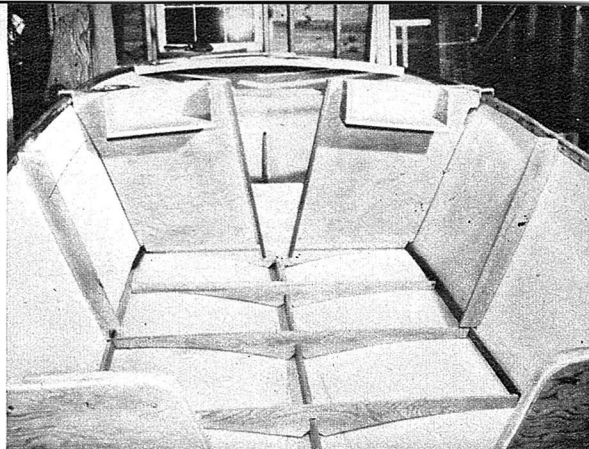
catalyst which hardens it vary slightly with different manufacturers, so follow the instructions with the resin you buy. In new boat construction, it is generally recommended that you thicken the resin. Stirring in this thickener takes time, but it pays off in that your resin goes further. Color pigment, if you use it, is added next. You can put the pigment in all the resin mixes or add it only to the last coat. We used a white pigment all the way through.

Every piece of cloth that goes on the mold must be thoroughly saturated with resin. This is best done with a mohair roller about seven inches wide. Just pour the resin on, a cupful at a time, and work it through the cloth. Any spot which isn't saturated will show up as dull and resin should be applied to it immediately. Once the resin becomes tacky, you can't go over it. The cloth will conform to the curve of the hull as you work the roller from chine to keel, but try not to pull it so that the weave is stretched excessively. Each piece of cloth should overlap the other by at least two inches and you can continue right through lapping them while the resin is wet. However, you can stop at any point when a full piece of cloth is saturated, let the resin harden and proceed with the next piece at a later time. When the bottom is covered, lap the cloth on the underside of the chine and work down the sides. After the first complete layer is on and the resin is hard, take a disk sander and feather all laps. They can be smoothed so that they're hardly visible. Also sand any resin runs that may have occurred.

A layer of Fiberglass matte and a layer of cloth follow. We applied both at once, saturating the matte through the cloth. Start with the bottom again, laying on sections and overlapping them as you progress with the application of the resin. However, don't press the roller into the cloth; distribute the resin lightly and evenly. Be



**PLYWOOD** transom panel is installed inside Fiberglas hull. Note cleats for well.



**LOOKING FORWARD** after installing the reinforcing frames and plywood seat back.

sure there are no dull spots and work out all air bubbles. Then let the resin harden and sand the whole boat. If necessary, a finish coat of resin can then be applied and sanded lightly.

Removing the hull from the mold is the next step. Start at the transom and simply pull the Fiberglas away to free it. Don't be alarmed at a cracking noise for this is only the mold release giving way. Then continue pulling around the gunwales. After this, thin pieces of oak can be slid under the shell to help break it away up to the chines. The last step is to exert upward pressure on the Fiberglas transom with a pair of bumper jacks and then hammer all around the bottom, using a soft pine block to cushion the blows. You'll be able to hammer with a good deal of force and, before long, the shell will part from the mold. Then lift off the hull and block it upright on the ground for finishing.

Finishing the hull proceeds rapidly from this point. First the inner and outer sheer clamps are installed. To bend them as required, you'll have to steam them. An eight-foot length of pipe is capped at one end and two quarts of water are poured in. Then one or two ten-foot strips of  $\frac{3}{4} \times 1\frac{1}{4}$ -inch oak are inserted and the open end of the pipe is stuffed with cloth. With the capped end of the pipe in a fire, the water boils and produces steam inside. After about a half hour, the wood will be soft enough to bend easily. Take it out and immediately clamp it in place along the outer sheer. When the outer sheer clamps are dry, your metal clamps can be opened up to include the inner sheer clamps. Then, while the metal clamps are still in place, drill and countersink pilot holes for  $1\frac{1}{4}$ -inch No. 8 flathead brass screws, spacing them three inches apart. Drill from the inner to the outer sheer

clamp, right through the Fiberglas. Then turn in the screws and release the metal clamps. The ragged, projecting edge of the Fiberglas can then be trimmed off.

Next the breasthook is installed with  $1\frac{3}{4}$ -inch No. 8 flathead brass screws passing through from the outer sheer clamps. Then the chines are fitted in. They're  $\frac{3}{4} \times 1\frac{1}{4}$ -inch oak, 14 feet long, and also require steaming at the forward ends. They're not fastened but braced in place until other structural members are added.

The  $\frac{5}{8}$ -inch plywood inner transom, notched so that it fits over the chines, goes in next. It is secured by passing  $1\frac{1}{4}$ -inch No. 8 flathead brass screws through the hull from the  $\frac{5}{8}$ -inch plywood outer transom. Space the screws around the outside at six-inch intervals. Brass angles are used between the inner transom and the inner sheer clamps. When the installation is complete, the outer transom is covered with a layer of Fiberglas.

At this point the keelson is installed between the base of the transom and the stem. The aft end is cut at a  $15^\circ$  angle and it is recessed one-quarter inch into the transom. The forward end is fitted to the stem and is secured by means of  $1\frac{1}{2}$ -inch No. 8 flathead brass screws through plywood doublers on either side of the butt joint. Then the frames can be fitted over the keelson. Be sure to cut the limber holes so that bilge water can flow the length of the hull along the keelson. To hold the frames, use angle braces at the keelson and at the sheer. On each side, an oak step is rabbeted into frames two and three and secured with glue and screws. Following the detailed drawing on page 52, the seat with the walk-through back and compartments can then be installed.

After putting in the floor forward of the seat, an angled piece of  $\frac{5}{8}$ -inch plywood is





**FRAMES** and chines are secured by Fiberglass, eliminating fasteners through hull.

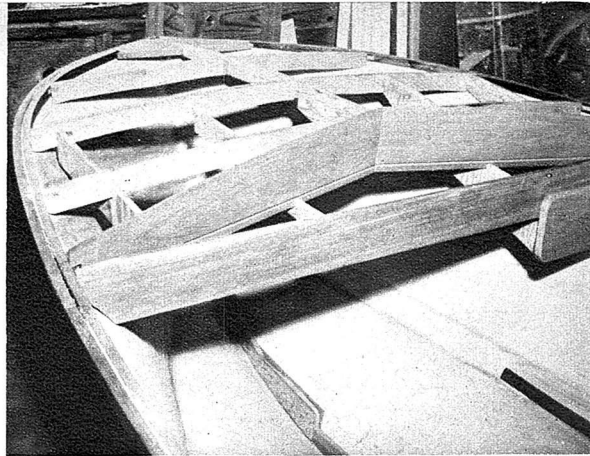
fitted in to serve as a footrest and a support for a half-inch plywood storage deck in the bow. The complete deck and footrest assembly, when covered with Fiberglass, becomes an air chamber which helps provide flotation in the boat.

The self-draining well is next. Follow the drawings, installing all the plywood panels with glue and 1¼-inch No. 8 flat-head brass screws. Before putting in the bottom panel, Fiberglass all the joints with matte. Then, with the bottom panel in place, Fiberglass the whole interior of the well to make it completely watertight.

When the frames, seatback and well are installed to your satisfaction, they are then bonded to the hull with Fiberglass. First, however, be sure that all the mold release wax is removed from the interior of the hull. We found it faster and easier to use a paint scraper rather than the solvent sold by the dealer. Any gaps between the wood and the hull are filled with resin and Fiberglass matte and then the cloth is applied as shown in one of the photographs. Be sure the limber holes are not blocked when the cloth is put on.

The forward deck beams are cut from ¾-inch oak to a 21-foot arc. This gives a crown of three inches at the rear center. Each deck beam is half-notched to mate with half notches in the center beam and is tied into the sheer clamps with angle braces. Other longitudinal plywood braces are cut so that a well for small articles can be formed between the V dash and the straight dash. The two braces on the right extend into the cockpit to form a mount for the steering wheel panel. When the framing is complete, the V dash and the straight dash panels are installed.

The deck beams are covered with half-inch plywood which is put on in two sections that butt along the centerline. Each



**DECK FRAMES** and dash panel are fastened to sheer clamps by means of brass angles.

section is fastened to the beams with one-inch flathead brass screws spaced four inches apart. Countersink all screw heads just a little below the surface. When the deck is on, the ¾-inch mahogany gunwale cap can be butted against it and continued down each side to the transom.

Details of the windshield appear in the drawings on pages 52 and 53.

Installation of the floorboards completes the major woodwork in the boat. After that, a mounting block for remote controls and an arm rest are installed.

Finishing is preceded by a general sanding of all woodwork. Then the fir plywood gets a coat of Firzite followed by a light sanding and two coats of marine enamel. The mahogany is filled and stained in one operation with a paste wood filler. Then it gets at least three coats of spar varnish, the first coat being thinned 50 per cent with turpentine and the others full strength. Sand lightly between each coat and rub the last coat down with a thin paste made of pumice stone and water if you want a satin finish.

Last, varnish all the trim and fasten it in place. Then add the hardware and lights and proceed with the launching. We'd recommend at least 35 hp on the transom of Skimabout and anything up to 80 hp can be used. •

#### LARGE-SCALE PLANS

are sold with a bill of materials. For these and the complete text giving construction details, send \$5.00 to MI Plans Service, Fawcett Building, Greenwich, Conn. Specify Plan B-240, Skimabout.

# How To BUILD 20 BOATS

## HALCYON

By Al Jetter

Use a molded plywood hull for a head start on your boat building.

**A**NYONE with a fair ability at wood-working can finish a molded plywood hull into a good, serviceable boat. This method of boat-building combines the satisfaction of doing it yourself with the assurance that the finished product will have a professional appearance.

The following photos show the various steps leading from bare molded hull to the finished boat. Work in short, easy stages and you will find yourself progressing

quickly, with a minimum of confusion. Double check every step as you go along.

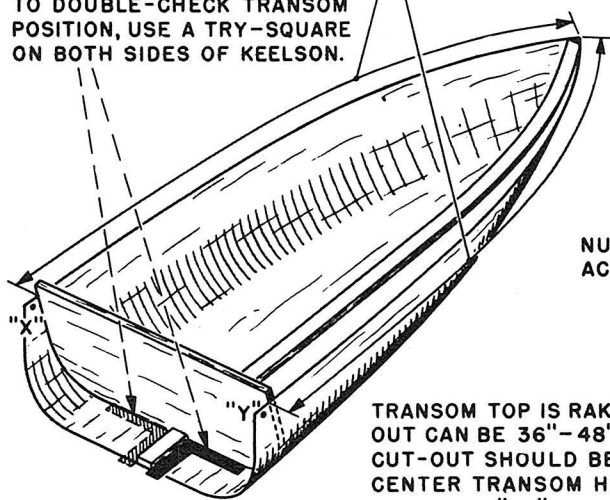
The \$400 budget includes \$260 for the hull, \$140 for other materials used. There are a number of manufacturers specializing in the construction of molded hulls. Ours was purchased from U. S. Molded Shapes, Inc., 640 Market St., S.W., Grand Rapids 2, Michigan. This company offers hulls ranging from a 9 ft. dinghy to a 24-footer, with price tags from \$106 to \$778. •

**ASHORE OR AFLOAT** the clean lines of the Halcyon give her a really professional look. Her broad beam lends stability in open waters and her flaring bow helps to minimize spray.



MEASURE EQUAL DISTANCES BACK ALONG GUNWALES FROM CENTER OF STEM POST AND MARK HULL.

TO DOUBLE-CHECK TRANSOM POSITION, USE A TRY-SQUARE ON BOTH SIDES OF KEELSON.

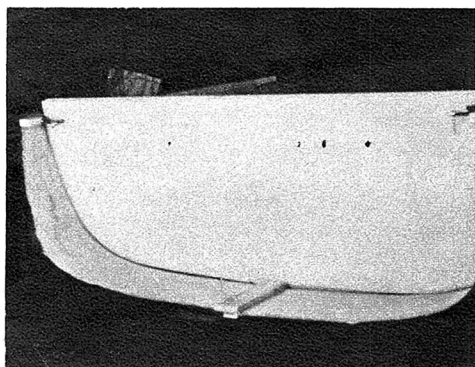
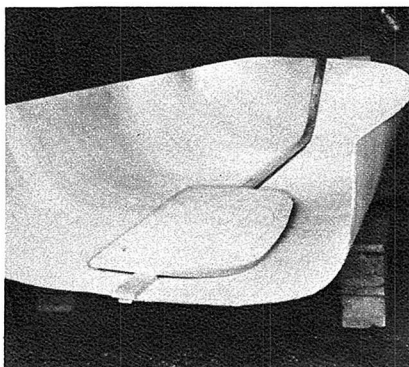


TEMPORARY STOPS MOUNTED ON HULL AFT OF TRANSOM (AT POINTS "X" & "Y"), SINCE TRANSOM MUST BE REMOVED FOR TRIMMING ANY NUMBER OF TIMES BEFORE ACCURATE FIT IS OBTAINED.

TRANSOM TOP IS RAKED AFT APPROX. 12°. MOTOR CUT-OUT CAN BE 36"-48" WIDE. FOR A 22" HIGH TRANSOM, CUT-OUT SHOULD BE 6"-7" DEEP, LEAVING 15" OR 16" CENTER TRANSOM HEIGHT. LOWER CORNERS OF CUT-OUT ARE 3"-4" RADIUS.

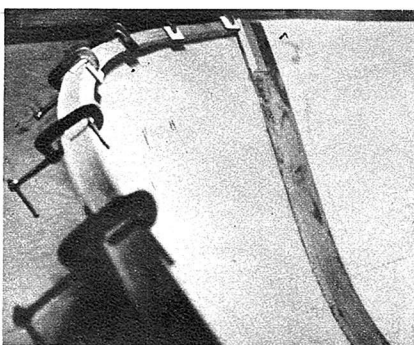
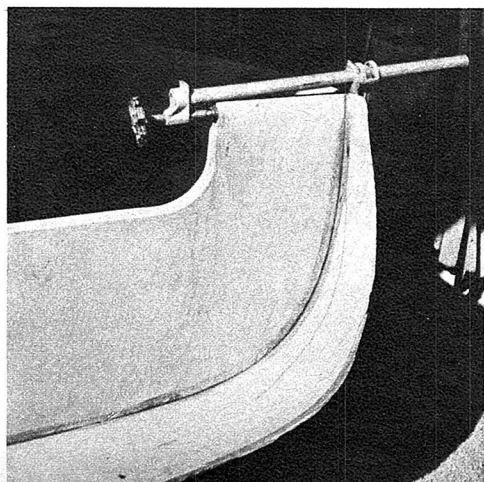
HULL is trimmed along sheer, not at transom. Made of 5-ply birch, she is 16 ft. long, 30 in. deep, 65 in. beam.

TRANSOM installed at right angle to center line. Test for tight fit. Mark and cut top edge of transom, then notch for outboard.



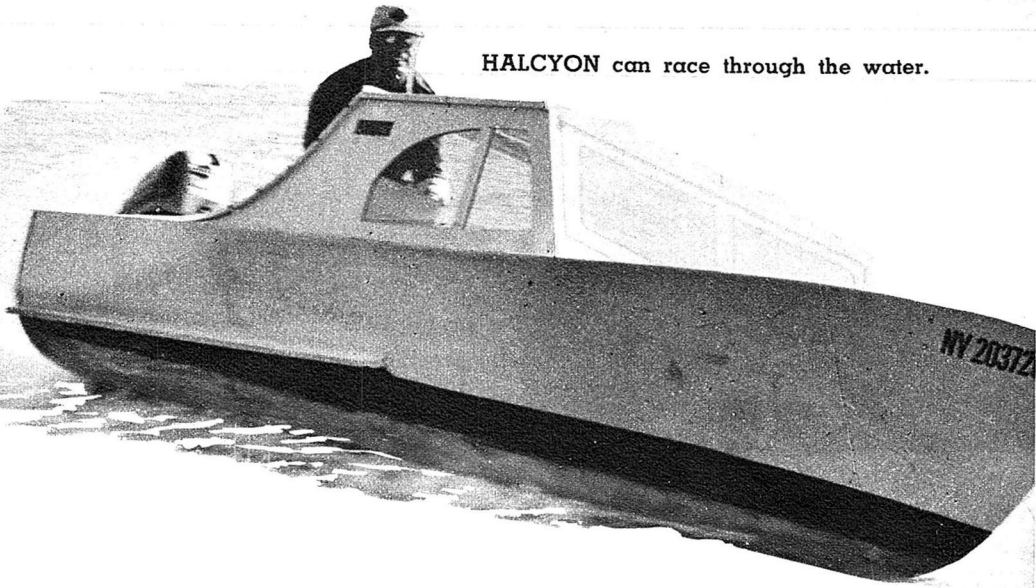
CLAMP well-glued outer transom edge in place. Start at keel, drive in 2-in. No. 8 brass screws at intervals of three inches.

BEVEL forward end to fit, clamp along inner hull. Fasten oak clamp every 12 in. with flat head bolts, 1½x3/16th in.

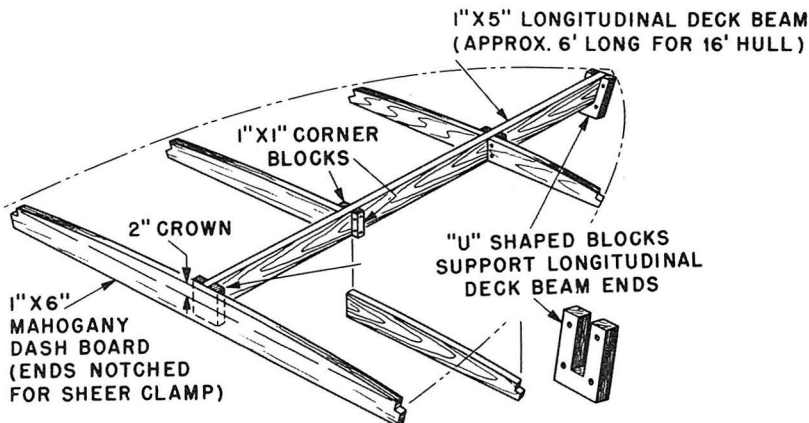
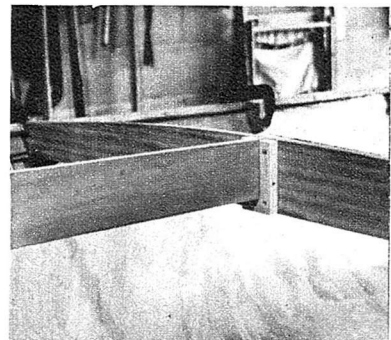
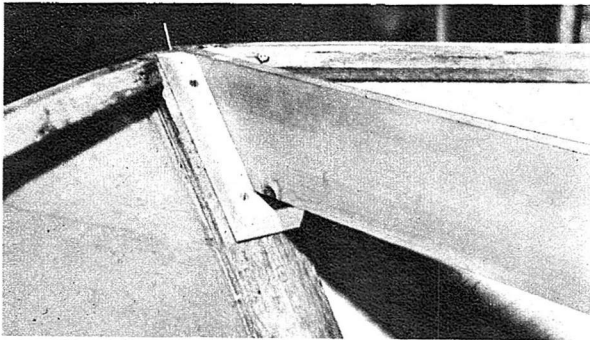


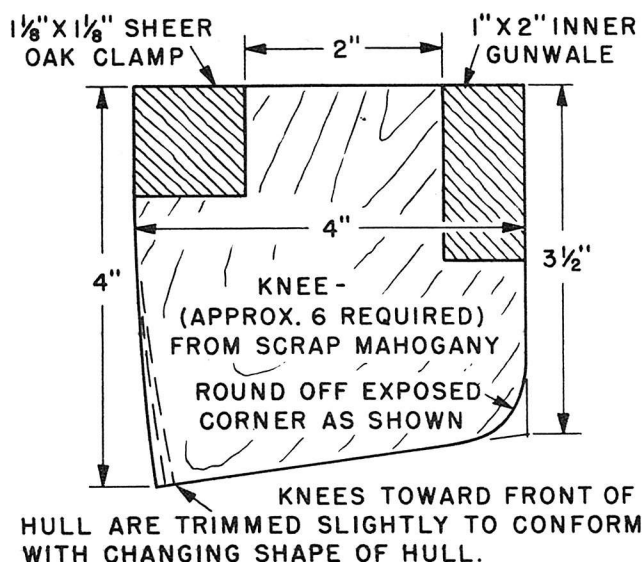


HALCYON can race through the water.



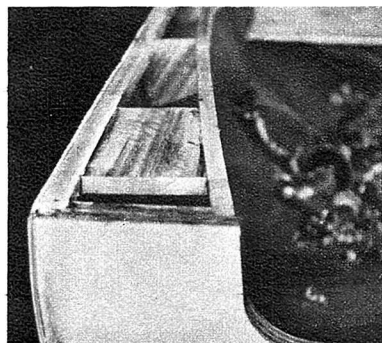
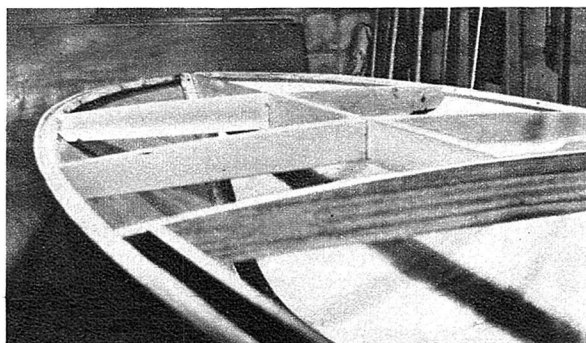
A U-SHAPED block, properly beveled, is fastened to top of stem post to support forward end of longitudinal deck beam. After end of beam is supported by another block screwed to center of dashboard (photo right). 1x6-in. dashboard is cut from mahogany with 2-in. crown, fastened with  $\frac{1}{4}$ -in. brass bolts. Finish wood later.





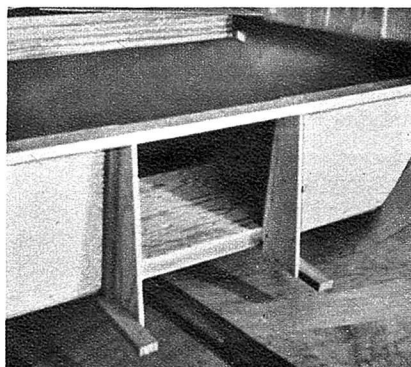
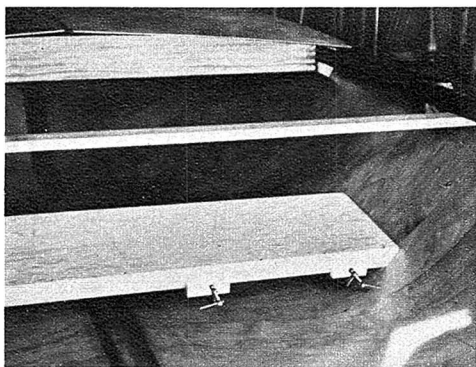
FASTEN inner gunwales to knees with 2-in. brass screws. Bolt the two thwart braces in three places.

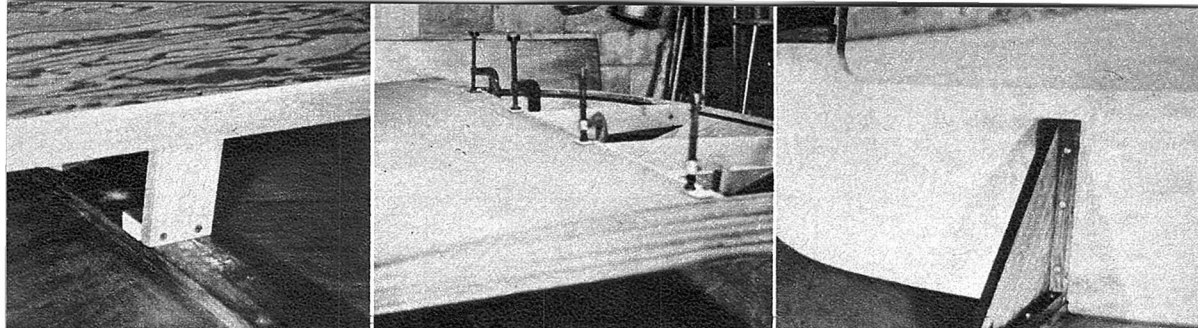
FIT 1x8-in. mahogany blocks between clamp, inner gunwales; fasten with glue and brass screws.



BOTH ENDS of seat are fastened to strips bolted through hull. Top of backrest, 1x2 1/2-in. mahogany strip, is bolted to the clamp.

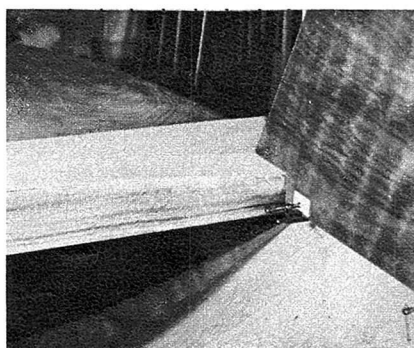
ATTACH 3/8-in. braces to reinforcing strips. Saw top rail of backrest flush with the inner surface of the hull.



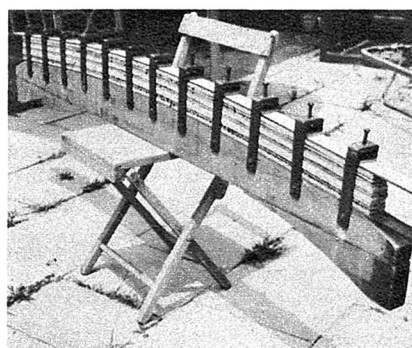


**ADDITIONAL** support for seat is gained by bolting small leg as shown above left. Center: clamp plywood panel to deck beams, mark for cutting—check each piece by reclamping in position for final fastening. Right: to hold stern brace securely, fasten it with 6 brass bolts.

**WITH** bottom cross member of front window in, notch cabin side to fit deck-dashboard corner; cut to match angles.

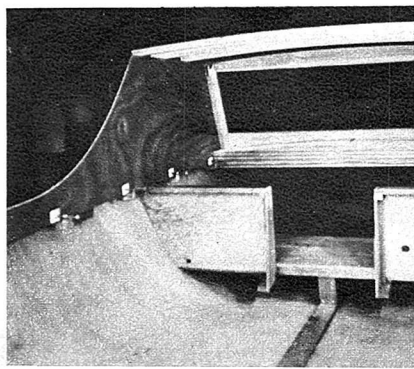


**USING** waterproof glue, homemade jig, laminate cabin top deck beams of four 1 1/4-in. strips of 1/4-in. plywood.

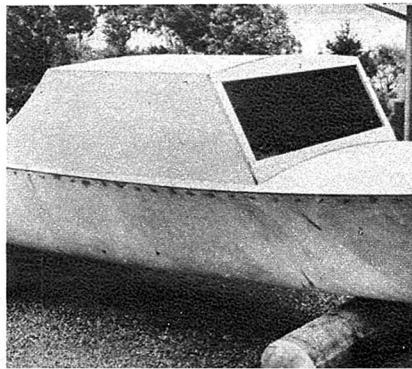


**FRONT** window frame is of glued and screw-fastened lap joints. Arc of cabin top beams matches similar arc of top and bottom of window frame. Beams could be sawed from a solid hardwood if so desired.

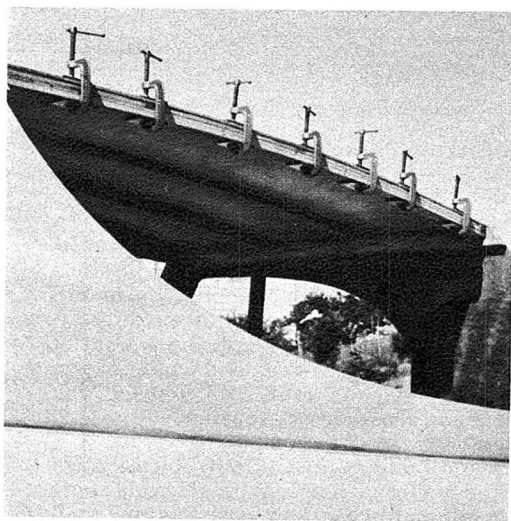
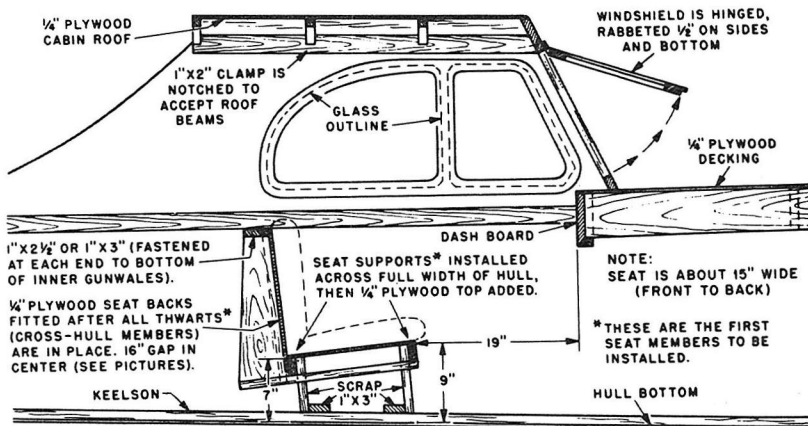
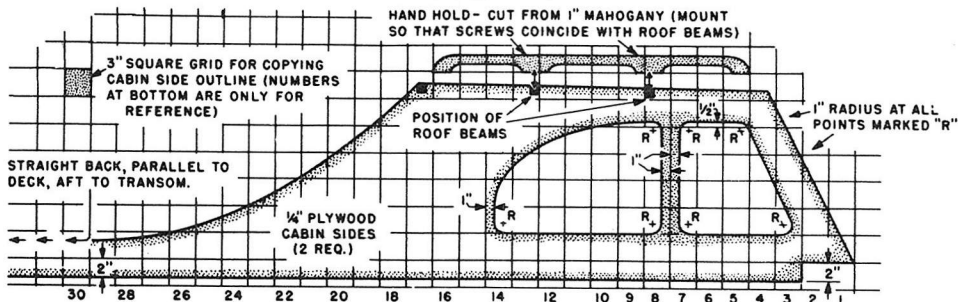
**WITH** front window frame and cabin beams fitted to side panels, unit is ready for fastening. Coaming goes aft.



**BRING** boat outside to check overall lines, position of side window openings. Look for pleasing curve of aft end.



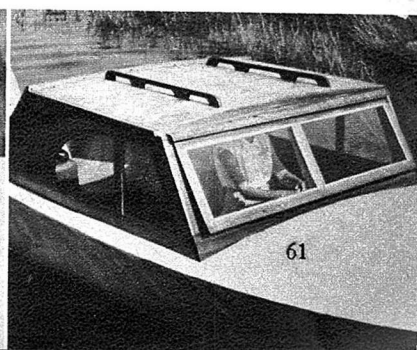
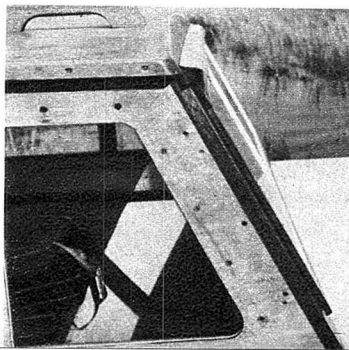




**BUILD** up notched frames from 2 thicknesses of  $\frac{1}{4}$ -in. plywood. Bolt the unit to the inside of the cabin.

**HANG** windshield with stainless steel piano hinge. Bent strip of fiberglass over hinge keeps rain out. Bolt handrails through cabin.

**AFTER** cutting side window openings with saber saw, fasten cabin units permanently in place. Clamp cabin top in correct position, glue and screw.



# How To BUILD 20 BOATS

## FOO-LING

By Hal Kelly

Build this class "A" or "B" runabout.



DRIVER got her to 45 mph and she is riding light for "A" despite his 170-pound weight.

**F**OO-LING will qualify under the A.P.B.A. rules for both "A" and "B" Stock Runabout and is very fast in both rough and good water. Highly maneuverable, she will bank in a tight turn right up on her side due to the fact that the upper chine is placed on the OUTSIDE of the non-trip which keeps the boat from sliding out. This type of construction I have never seen attempted on a plywood-planked hull. On a wider turn she can be made to ride the outside chine. As a marathon boat she is great. This strip of wood on the outside of her non-trip keeps her from diving into a big wave without offering a great deal of wind resistance. She rides beautifully when going into a headwind, won't wander all over the course, and runs as straight as an arrow. She will take any motor from 7 to 25 hp, but for motors other than the Champ Hot Rod and Mercury Quicksilver units, the transom will have to be made 17

inches high. Check with dealer for height.

Most important is getting the proper propeller for your outfit. This must be done before you try any hopping up of the motor. If you will give me the motor make, year, hp, and model number, and the weight of the boat with passengers, and what use you want to put your outfit to, I will tell you the make and kind of propeller you should use.

When building FOO-LING, please stick to the materials listed. With Fiberglas bottom all hardware and cushions she will weigh under 130 lbs. If you use Fiberglas on the bottom, you can use fir plywood—so what you save on plywood you can put into Fiberglas. With Fiberglas and all hardware she should cost about \$130.00 and take about 80 hours to build.

After accumulating the stock listed in the bill of materials, you are ready to start on the ribs. Full sized rib drawings are

available. Due to space limitations only half of the ribs are shown, but since the ribs are the same on both sides this will offer no problem. Cut out all of your rib components and place them on the full-size rib drawings using Anchorfast nails and screws as indicated on the drawing. A piece of thin tracing or wax paper will keep the glue off your plans.

The bottom of each frame is continuous from chine to chine; check drawing for size and shape. The sides of the frames are  $1\frac{1}{2}$  inches wide and straight-sided; the large gussets form the non-trip chines. Place the frame components on the layout and hold them in place with temporary fastenings. Place two plywood gussets over frames (one on each side) and fasten with glue and  $\frac{3}{4}$ -inch No. 16 Anchorfast nails. You will not have to drill pilot holes for this size nail. Use as many and about the same placement as illustrated on your full size rib drawings. When all 4 gussets are in place, carefully inscribe the center line on both sides.

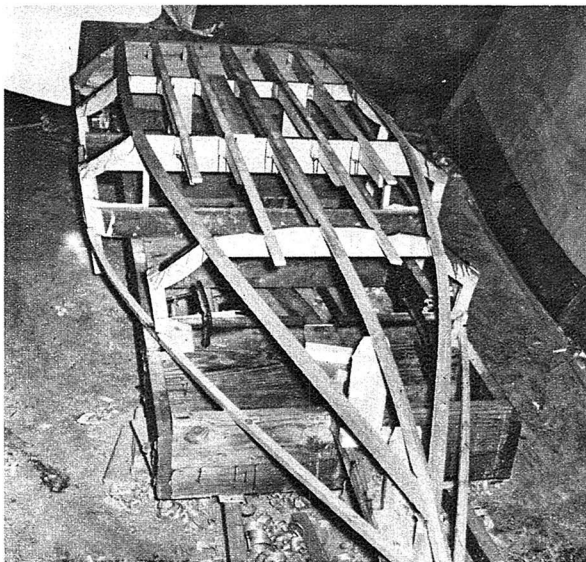
Assemble the transom and transom frame. Cut transom from  $\frac{1}{4}$ -inch thick plywood. Transom framing is  $1\frac{1}{8}$  inch or  $\frac{7}{8}$  inch thick. Assemble transom frame. All lapped joints should fit snugly. Coat mating surfaces of the joints and fasten together with  $\frac{7}{8}$ -inch No. 8 screws. Carefully notch for battens, keel, bottom chine, and sheer

before assembling transom frame to transom. Glue and fasten transom to transom frame with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails placed about two inches apart.

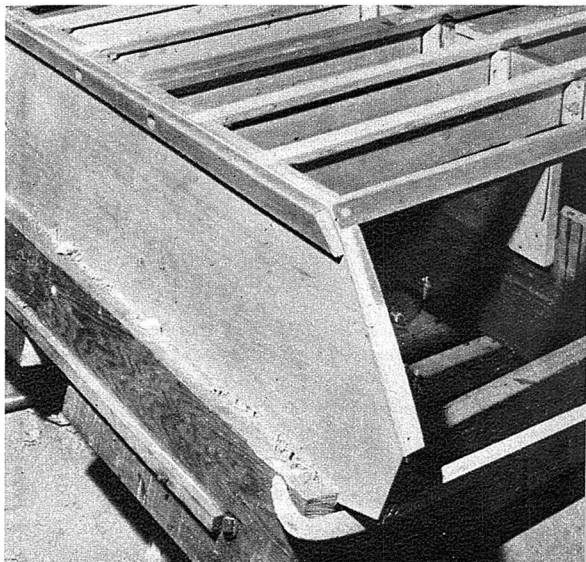
The keel and stem are one piece,  $\frac{1}{2} \times 1\frac{1}{2}$  inches, but forward of Rib No. 1 it is backed by another piece  $\frac{1}{2} \times 1\frac{1}{2}$  inches. Both are glued together when the proper shape has been obtained, and steaming is not necessary. This can be done now or later on, when all the ribs are set up.

After the glue in the frames has hardened, cut the notches for the bottom chine and sheer. Note that only in Rib No. 2 do the bottom stringers go through, on transom, Rib No. 3 and Rib No. 1 they butt.

The boat should be built on a level wooden floor, or on a wooden cradle laid on a concrete floor (see step-by-step drawings) in an area about the size of a one-car garage. Lay out the center line and frame lines on the floor or cradle according to the spacings given in the drawing, using such temporary bracing as you feel necessary. Set up frames and transom; a couple of nails will hold each frame to floor or cradle. When all is securely erected, double check and make sure everything lines up. Remember, no hooks or rockers in the bottom. Coat the bottom stringers and notches with glue and slip into place. Then fasten to ribs and transom with small blocks; glue and fasten in place with

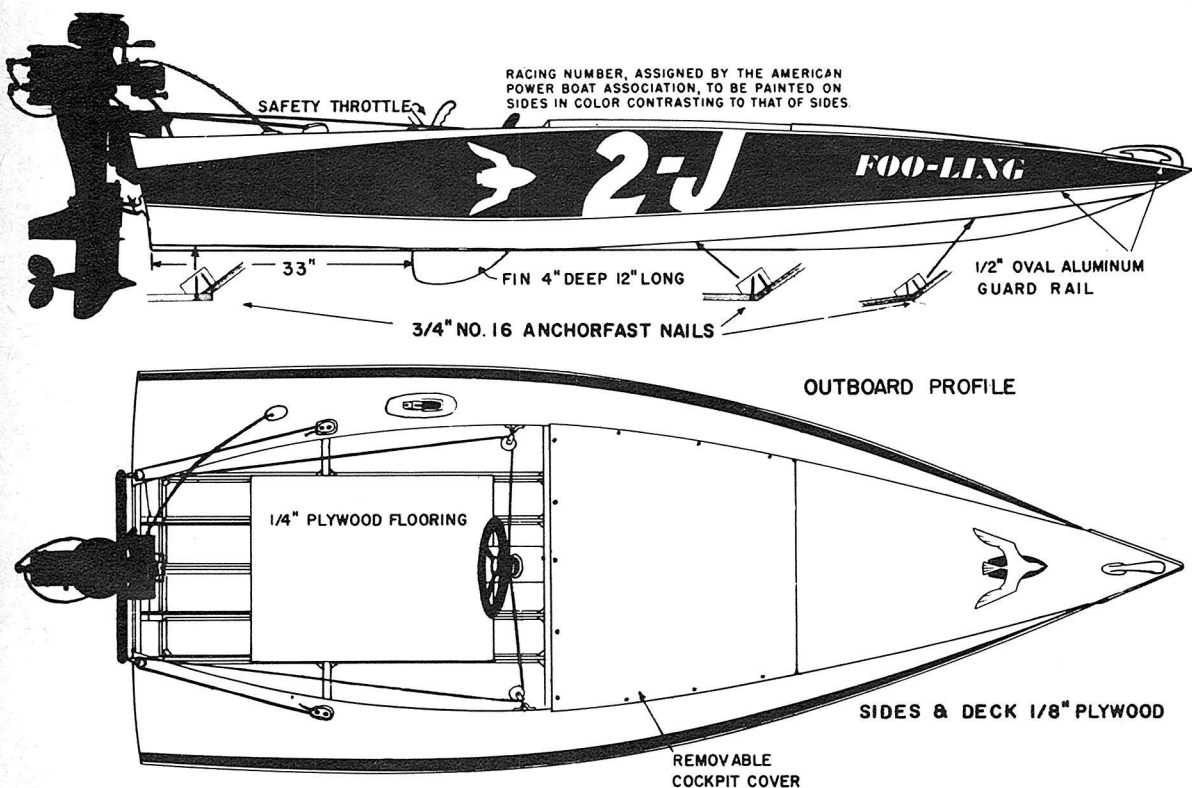


YOU don't have to use this type of jig. The one illustrated on page 66 is adequate.



TRANSOM with afterplane in place. Two drain holes proved ideal for marathons.

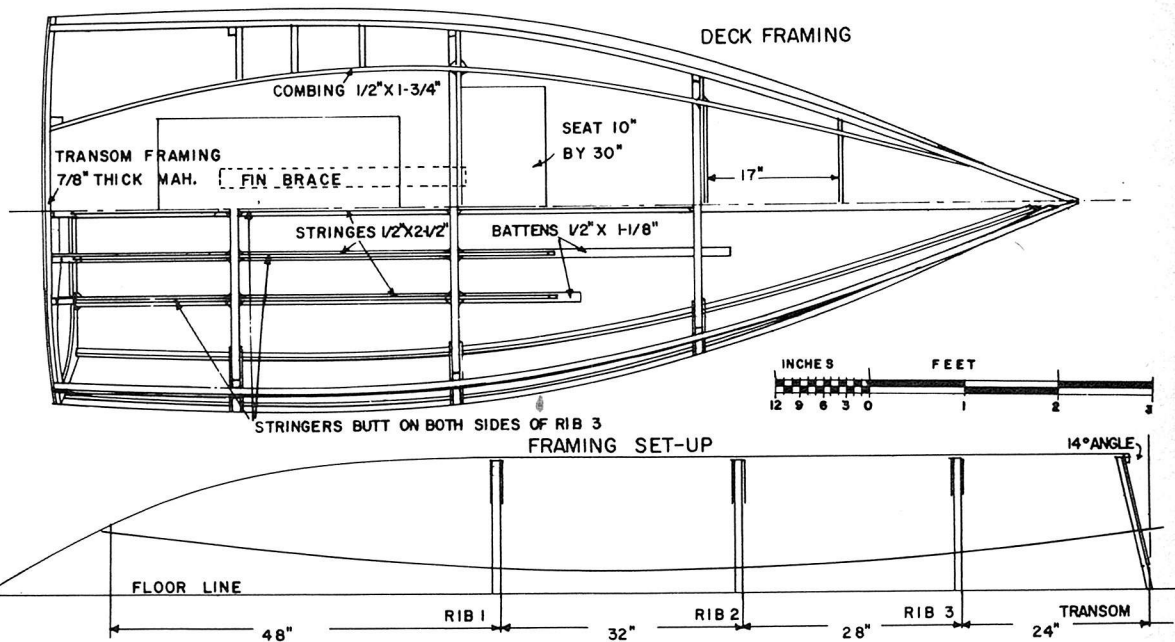
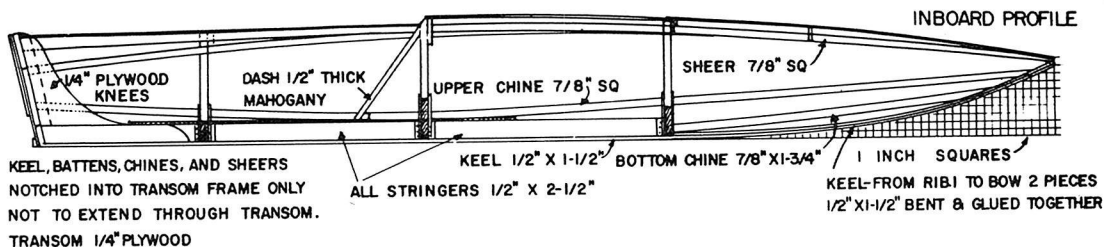




1-inch No. 16 steel brads. Next slip the keel in place with glue and 1 1/4-inch No. 8 flathead wood screws, using two screws to secure to transom and all ribs, and one about every 8 inches to the bottom stringer. The same procedure is used on all battens except that one screw is used to fasten to transom and all ribs. Next secure the bottom chine and sheers, using glue and 1 1/2-inch No. 8 flathead wood screws. Where they butt against the stem and transom, bevel them to obtain a good landing; one screw at each frame, transom and stem. The bottom chine is cut thinner (5/8 inch thick) from the bow to Rib No. 1, where it gradually takes on its original thickness; this will allow it to bend easier and lighten the nose. Don't forget fin bracing from Rib No. 2 to Rib No. 3. Add 1 inch after plane to transom.

Fairing is probably one of the most important phases. If you have done a good job of setting up the frames, this should not be too difficult a task. Use a plane and a good wood file. Carefully trim and fair

so the plywood planking will lie on all structural members. Check the fair from time to time as you progress by springing battens around the structure. Remember that from Rib No. 2 to the transom the bottom must be perfectly flat, and the plywood bottom can't be flat unless the structural members are faired flat. The non-trip chines are fitted first. A large sheet of wrapping paper will come in handy to give you a rough idea of their shape. Cut the panels a bit oversize, clamp in place and mark the outline of the bottom chine. Remove them and cut out a wee bit over size. Remember to glue and fasten in place the 1/8-inch thick by 1 1/4-inch square wood blocks at the top of the non-trip chine of each rib. The bottom goes over the edge of the chine except up toward the front where they butt each other. After the non-trip chine is fitted, glue and fasten it in place using 3/4-inch No. 16 Anchorfast nails to transom, bottom chine and stem, and one nail at the top edge of the chine at the transom and each rib.



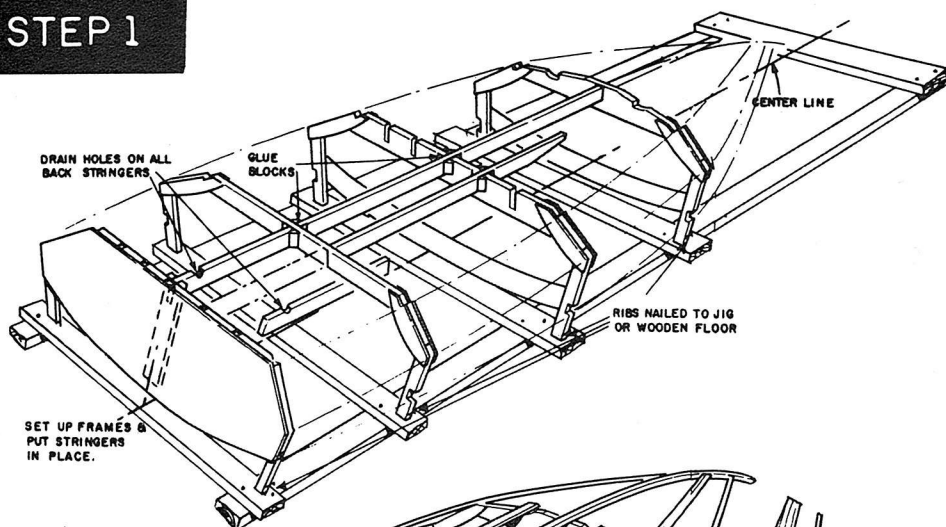
You will have to fair the bottom of the non-trip where the bottom will rest on it, and up toward the front where the bottom butts the chine. The bottom goes on much the same way and is all one piece with a V cut in the front to allow the bottom to come to a V. Up toward the front it will take a little careful fitting to make the bottom butt into the non-trip chine. Use a few screws to temporarily hold the bottom in place while you are fitting it. Mark on the bottom from the inside where all the battens, etc., come in contact.

Glue is applied to all structural members that the bottom will touch, and also to the bottom where you have marked areas the battens, etc., will contact. Put the bottom in place (a two-man job) and screw in the same screws that held it temporarily in place while you were fitting the bottom. Three-fourth-inch No. 16 Anchorfast nails are used to fasten the bottom to the transom, keel, battens and stem. Place about every 1 3/4 inches apart and countersink a bit (about 1/16 inch). The bottom is best

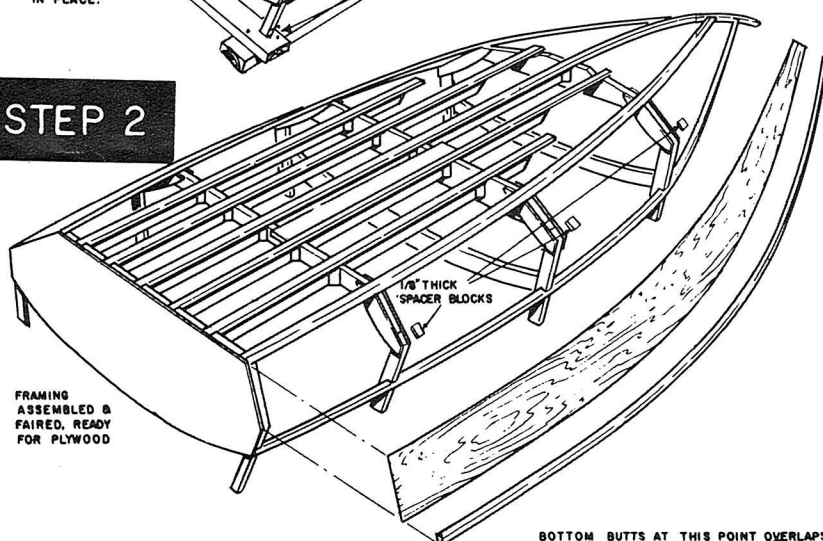
fastened to the battens forward of Rib No. 2 with 5/8-inch No. 8 flathead wood screws, placed about every 4 inches apart, and countersink about 1/16 inch. After the bottom is dry, plane the edge at the same angle as the chine, except toward the back where it is allowed to remain square. This gives you a little lip to help grip the water on turns.

The upper chine is now fastened in place. This is 7/8 inch square and starts to taper toward the front to nothing at the very front. This taper starts about 5 feet from the front. Glue and 1 1/2-inch No. 8 flathead wood screws are used to fasten the upper chine to all ribs and transom, well countersunk. From the inside the non-trip is fastened to the upper chine with 3/4-inch No. 16 Anchorfast nails set 1 3/4 inches apart. At the very front this upper chine is best clamped in place until the glue is dry. At this point take the boat off the floor or jig and set it up on two well-padded horses at a good workable height. Saw off the extra piece on transom and ribs.

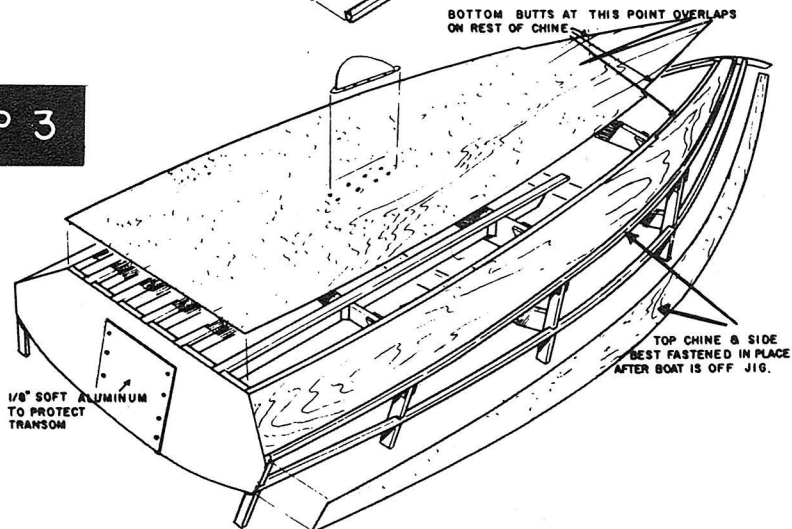
## STEP 1



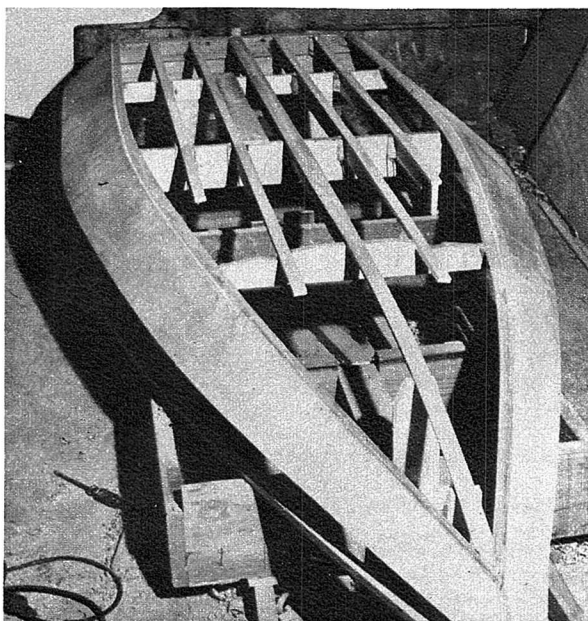
## STEP 2



## STEP 3



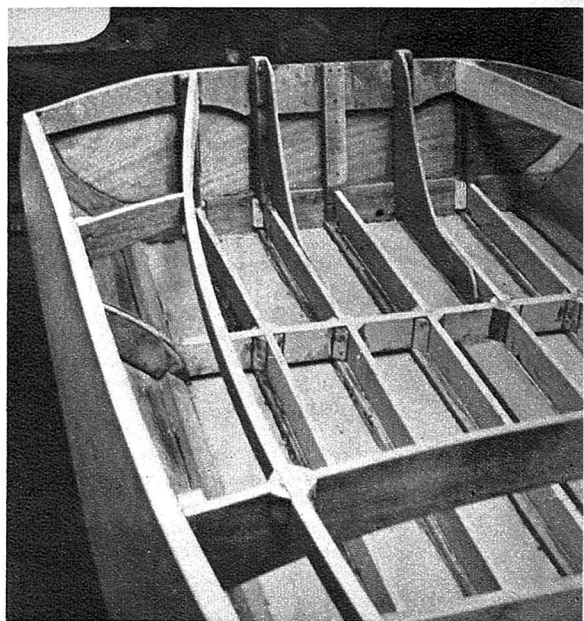




**NON-TRIP** chines in place and ready for bottom planking, which is in one piece.

Fashion the deck beam, cockpit coaming, and other braces according to the plan; all are  $\frac{1}{2}$  inch thick. The cockpit coaming runs from  $3\frac{1}{2}$  inches wide at the transom to  $\frac{3}{4}$  inch wide where it is fastened to the inside of the sheer. Fit transom bracing and knees in place as indicated in drawings and photos. Knees are glued and fastened to the stringers and transom bracing with Anchorfast nails and screws. If you use a flush throttle, now is the time to put in the bracing for it.

Now fair off the upper chine and fit it to the sides. The side is glued and fastened in place with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails spaced  $1\frac{3}{4}$  inches apart. When the side is dry, fair off at the upper chine as shown in the full size Rib Drawings; also fair at the sheer line. The side decking is glued and fastened in place with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails. The deck beam on Rib No. 1 is built up on one side so you can slip the removable cockpit cover in place after the front middle decking is fastened in place. Front middle decking is fastened in place in the same way as the side decking. Glue and fasten flooring in place with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails. This forms a structural part of the bottom and will prevent it from warping or cupping.



**TRANSOM** with all bracing in place. Varnish the inside at this time, give 4 coats.

The front seat offers no problem and is not glued in place. Use  $\frac{7}{8}$ -inch No. 8 flat-head wood screws. Sand the entire boat down and varnish or paint to suit your taste. Remember to varnish under the floor boards **BEFORE** you fasten them in place. Also, it is a good idea to varnish the entire inside before the decking is put in place. Give the inside 4 coats. The bottom, to the top of the non-trip chine, is fiberglass. Read fiberglassing instructions on page 68. Now screw fin in place and install hardware. I bolt my back lifting handles in place as I use them to tie down my motor.

Now for that first test run! If you are racing, be sure to have a good, sound, safe helmet. Always wear it and a good life jacket with collar, even when testing. Motor angle and height are very important for racing and a motor  $\frac{1}{8}$  inch too high or low has lost many a race. A marine speedometer is handy to have while making these adjustments. Spend a little time with your outfit; learn how to handle her; get the feel; find out where the best place is to kneel in her when turning, both in calm and rough water. The first turn in a race is no place to learn the feel of your boat. Remember, you have a great boat, but it is only as good as the driver.

## BILL OF MATERIALS

### BRONZE, MONEL or EVERDUR FASTENINGS

- 2 dozen  $\frac{5}{8}$ " #8 flathead wood screws
- 1 gross of  $\frac{7}{8}$ " #8 flathead wood screws
- 2 gross of  $1\frac{1}{4}$ " #8 flathead wood screws
- 4 dozen of  $1\frac{1}{2}$ " #8 flathead wood screws
- 3 lbs. of 1" #16 Anchorfast nails 950 to lb.
- 8 carriage bolts  $\frac{1}{4}$ " x 4" with nuts and washers

### PAINT PRODUCTS

- 5 lbs. of Weldwood glue
- 1 lb. of Wood Dough or similar surface filler
- 1 gal. of Spar varnish for interior, decking, and exterior

### PLYWOOD

- Decking and sides 2 sheets of marine grade plywood  $\frac{1}{8}$ " x 4' x 8'
- Bottom non-trip chines, seat, and flooring 2 sheets of Marine grade Plywood  $\frac{1}{4}$ " x 4' x 12'

### SITKA SPRUCE or WHITE CEDAR

- Sheers and upper chine .. 4 pieces  $\frac{7}{8}$ " sq. x 12'
- Battens ..... 4 pieces  $\frac{1}{2}$ " x  $1\frac{1}{8}$ " x 8'
- Keel ..... 1 piece  $\frac{1}{2}$ " x  $1\frac{1}{2}$ " x 12'

- Bottom stringer ..... 1 piece  $\frac{1}{2}$ " x  $2\frac{1}{2}$ " x 8'
- Bottom stringers ..... 4 pieces  $\frac{1}{2}$ " x  $2\frac{1}{2}$ " x 7'
- Frames ..... 1 piece  $\frac{7}{8}$ " x 12" x 12'
- Deck frames, etc. .... 1 piece  $\frac{1}{2}$ " x 8" x 12'

### HONDURAS MAHOGANY

- Inside of keel at bow .... 1 piece  $\frac{1}{2}$ " x  $1\frac{1}{2}$ " x 5'
- Transom framing ..... 1 piece  $\frac{7}{8}$ " x 8" x 16'
- Bottom chine ..... 2 pieces  $\frac{7}{8}$ " x  $1\frac{3}{4}$ " x 12'
- Dash and dash beam ..... 1 piece  $\frac{1}{2}$ " x 7" x 7'

### HARDWARE

- 1 Steering wheel
- 1 piece of steering rope 26'
- 1 Safety throttle
- 1 Bowden throttle cable 5' long
- 1 Racing fin
- 2 Forward steering pulleys, with anchor straps
- 2 Rear pulleys
- 2 Steering line tieback
- 2 Stern lifting handles
- 1 Bow handle
- 24' of  $\frac{1}{2}$ " oval aluminum
- 2 Steel 'S' hooks to hold rope block to steering bar

## FIBERGLAS

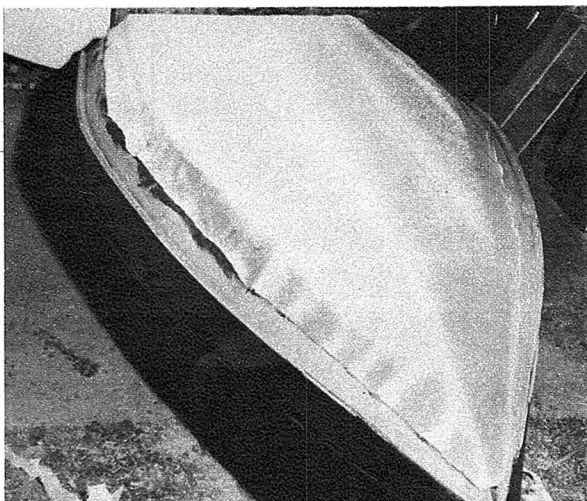
The bottom of FOO-LING is Fiberglassed, up to the top of the non-trip chine at the expense of 10 extra lbs. Costs ran me a little less than 40 cents a foot. I used a medium weight glasscloth, 50" wide, which left no seam on the bottom at all. A thin application of the plastic was applied to the bare wood with a brush. After it had hardened (the next day), I laid the cloth over the bottom and trimmed to fit. You need not cut out a V for the front as it drapes over the bow very well. A generous coat of plastic was applied to the bottom, the cloth laid over the bottom and smoothed out, and more plastic was applied with a squeegee to smooth. The cloth becomes almost invisible if applied correctly. The next day with a grinder I carefully ground down the surface so that it was smooth, flat, and even, and one more coat was applied with a brush, and carefully smoothed with a lot of elbow grease and wet sandpaper. Then a lacquer compound was used to give a plate-glass finish. Fiberglass is composed of a plastic and a hardener plus the glass cloth or mats. You have to work rather fast. It's a two man job as the "pot life" is short or long depending on how much hardener you use. By short "pot life" I mean that the mixture hardens in the pot before it hardens on the boat. One minute it is liquid, but then it starts to turn into a jelly and proceeds to get very hard in a matter of seconds. I would say that for the beginner it is a dog job. But the results are very rewarding. It is literally as tough as glass and just as smooth. This is not intended to be a full discussion by any means, but just a few words to let you know what you are in for if you would like to Fiberglass the bottom.

Some say it's luck that often wins a race, but you will note that the best drivers make their own luck. You have a good boat, but a well-tuned motor and the proper prop, plus good setup also help to win. Oh yes, and the driver counts, too—you know darn well he does.

To get your racing numbers for A.P.B.A. racing, write to the American Power Boat Association; 2534 St. Aubin Ave.; Detroit 7, Michigan.

A mistake many new drivers make is that in testing and adjusting their motor too early the day of the race—setting their motor for the best speed at that time. A few hours later their race comes up, and perhaps by now, a strong wind has roughened the water so that in the middle of the race they find they are much too high or kicked out too much.

It's always nice to test out on good water; it's nice riding and you go much faster.



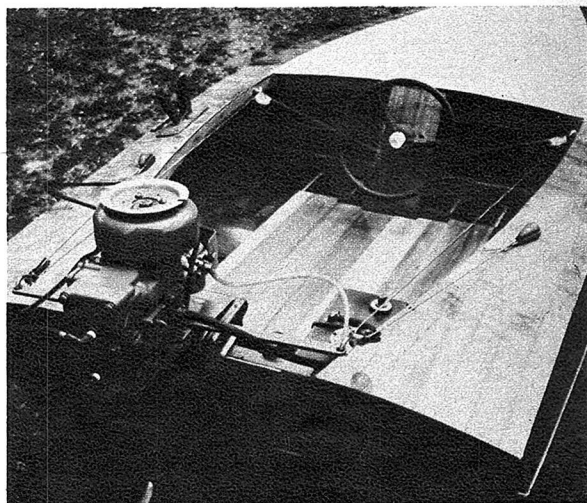
**FIBERGLAS** cloth cut to size. Notice how well it drapes over stem without cutting a V.

But I make it a point to do at least half of my testing on rough water. Try setting up some buoys and practice turns. I know a few fellows who set up their own course and practice out on it as if they were running a race; they even have a starting clock to practice on. I'll admit that there's nothing like an actual race for experience, but testing will be a big help.

Motor setup is not easy to learn. It's hard to know whether to kick it in (for rough water) or out (for calm water) or how high to run. You can look around and see how the better drivers are running their boats, but frankly this is of little help because boats and driving styles differ. I have seen two good drivers at a race both running the same make hydro, motor, and prop: one ran on the fourth motor notch, the other on the third. Both took a first and a second, and were tied on time. I'm sure this would confuse any beginner. When you practice for a race, don't just run around. Try all kind of setups.

Pickup means a lot in short-course racing and I often sacrifice a few miles of top speed for acceleration. As an example, before one race a friend of mine was passing me on a long stretch down the river. He was running faster than anyone else. With a beautiful start he hit the first buoy first in a three-buoy turn, but coming out of the turn five fellows passed him and I think he finally finished a sad sixth. I managed to steal a second in that heat.

The main thing you can do to a stock motor and remain legal is to carefully set



**ALL SET** up and ready to run. Note aluminum plate under motor to protect transom.

up your reed cage and points. Run the exact amount of oil in your motor that the manufacturer recommends—no more, no less. In breaking a new motor don't run a rich oil mixture, but set your high speed jet a little richer for the first hour, with the spark on two-thirds. Run the motor at half-throttle for 15 minutes. Then give the motor a five-minute break and run again for 15 minutes. Do this for about one hour running time. Now take her out and boot it wide open for a stretch, but for the next two hours running time refrain from any continuous high speed runs.

I always run my motor with a full butterfly. In case of a flip it's much safer for you and the other drivers, and will save you from a blown motor.

All in all it's a great sport and I never met a finer group of people than those within the sport. We cover about 8,000 miles each year just going to the races. When I go, the whole family goes: wife, two kids and the dog. Win, lose, or draw, we all have a picnic. See you at the races. •

#### LARGE SCALE PLANS

with full rib drawings (plus six colorful decals) are available for building this boat. They are \$10 post paid. Order from Hal Kelly's Plans, P. O. Box 2095, Fort Pierce, Florida. Specify Plan FB-FOO-LING.

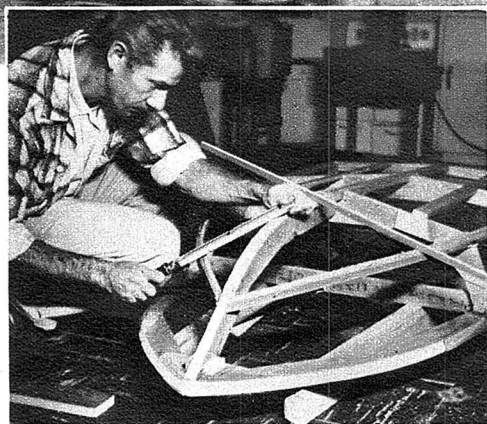


# How To BUILD 20 BOATS

## PEANUT

By Henry Clark

Build this 6-ft. runabout for your little boy.

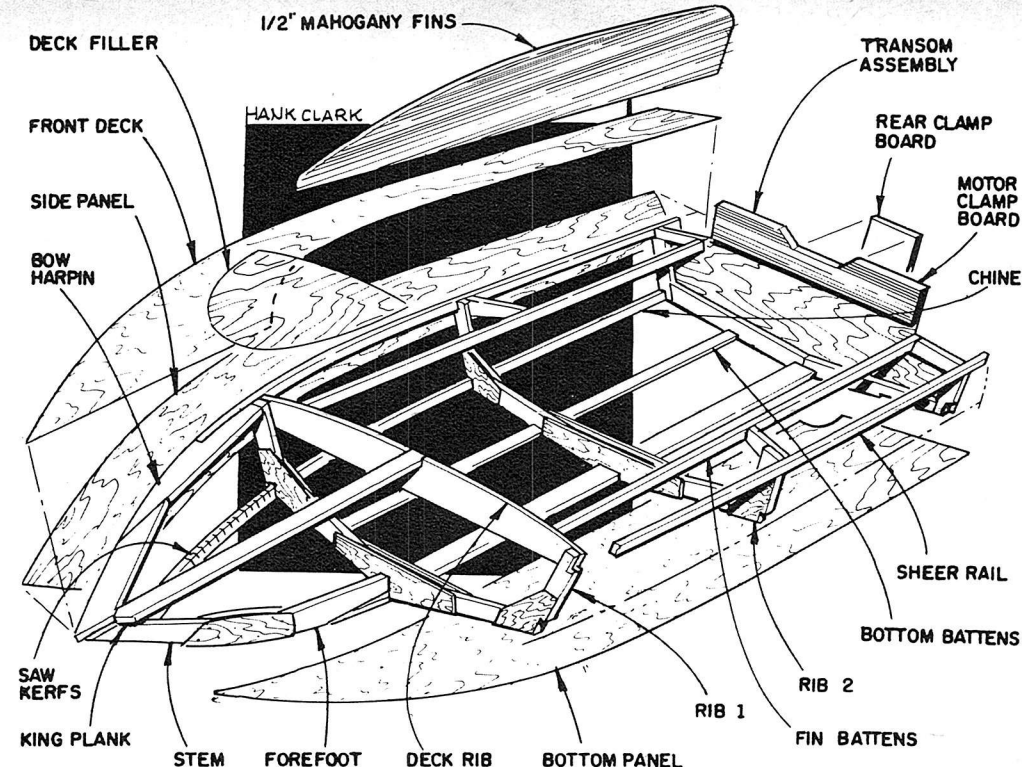


**BEVELING** entire frame for application of plywood skin. Stanley Surform file does precision job easily. Note fairing stick, above, used for checking out the bevels.

**YOU CAN KILL TWO BIRDS** with this project: Learn how to go about this business of making a boat from plans—and also to provide your little guy with one of the proudest life-size “toys” a kid ever had. You can build this little nifty in a couple of weekends and for less than twenty bucks. My boy is only eight and he loves it. With a helmet on he’s a king at the controls, the envy of every kid in the county—and the darling of the ladies. I nearly busted my bib with pride when I first saw him take off in it.

With the “Fisherman’s Friend,” the 3 hp Evinrude kicker which usually trolls, this baby takes off like a hydro. Does a smart 15 mph or better.

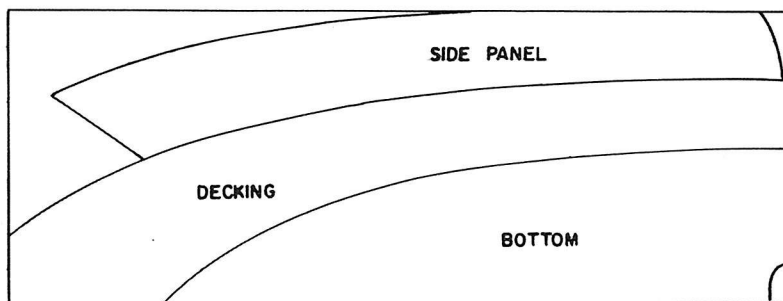
Built of  $\frac{1}{8}$ -inch plywood, the boat weighs about 35 lbs. With the motor off it



1/8" X 30" X 80"

FLUSH DOOR PANEL

(2 NEEDED)



can carry an adult, the action gained by holding onto a tow rope a la water skiing. Lots of fun here. Foreward driving is obtained by re-rigging the fuel feed, substituting a car choke cable to create a remote fuel feed.

Assemble the two little ribs first (about an hour's work) and you will find there's still time to make the transom in one evening. Lay out all the cut stock over the full-size rib plans, then put together with gussets, glue and nails. Transom is  $\frac{1}{8}$ -inch ply plank, edged with  $\frac{3}{8}$ -inch fir. Nail through the ply into the fir, using glue. Now cut the stem and forefoot stock, with band or jig saw, to curve, and join with ply gusset. Bow harpin is next, and is used because the sheer rail could never bend so sharply. Jig saw solid fir into curve, and

join halves with plywood web under. Now for the jig setup. This is two rails of 2x4 onto which are placed all ribs, transom, stem, and harpin. Nail a 1x2 across both ribs for support upside down on the rails. Space ribs, using keelson piece with clamps. Screw stem top to harpin, nail harpin to jig, join with keelson, which goes back to transom notch. Transom tilts 5 inches forward. After checking line up, drive a screw into each rib through the keelson, using glue liberally. Now add the sheer rails, screwing first to harpin's edge. Then bend back to transom notch with one screw per rib.

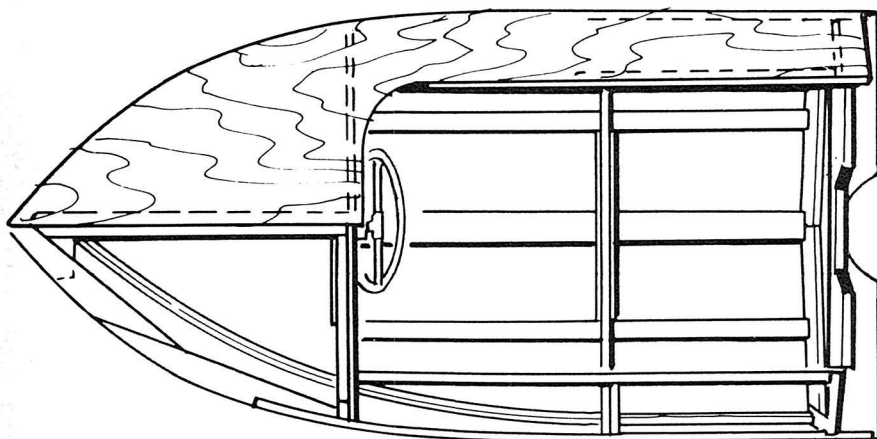
Now comes a more difficult area of work, bending on the chines, over which the side and bottom panels join. From transom to Rib 1, o.k. but from there to stem the bend

is too much for the  $\frac{3}{4}$ -inch mahogany. You could use fir, but this doesn't hold nails like mahogany. Solution is to cut a series of saw kerfs along the inside face of the chine, relieving the compressed grain. Then it bends readily. Water won't help. Space the cuts about  $\frac{1}{2}$  inch apart. As you bend toward the stem, plane on the bevel where the bottom ply lays, then secure with screws and glue to all ribs and stem. Now bevel all the chine, stem, and transom for good contacts of bottom and side ply panels, using a flexible stick to check your planing. Keelson also gets beveled in the process. Actually, you must fuss with this job as you would on any larger boat hull, since this is meant to keep water out with tight joints.

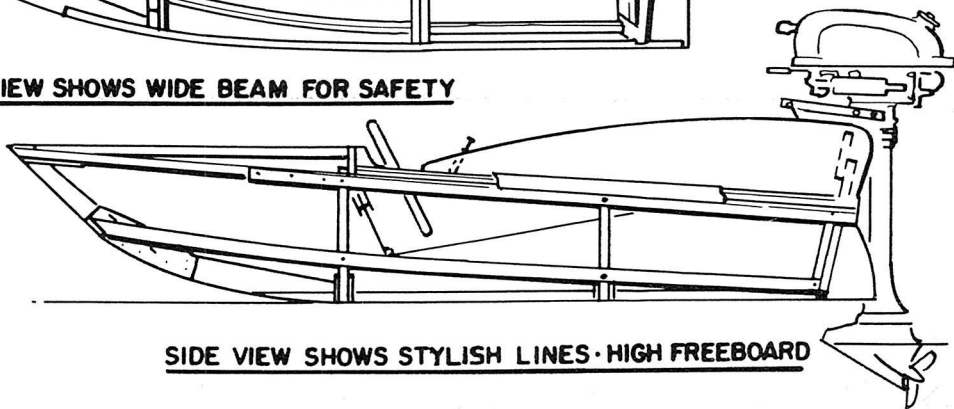
Now cut and place the two bottom battens into their notches, and secure using glue and screws. For planking, we used  $\frac{1}{8}$ -inch mahogany plywood from flush door stock, getting all parts out of two sheets, 30x80 inches. Use a 4 by 8-ft. panel if that's available, and get all parts except deck out of one sheet. If  $\frac{1}{8}$  is not available, use  $\frac{1}{4}$ -inch plywood, but this will make the boat heavier and overly strong, and require much wetting around the stem bend. But it can be used. The side panels go on first as usual and are blanked out by following the figures given on the large scale art. Clamp a side panel to the frame,

check for fit and lay, then put in about four pilot screws, as a position gauge. Then remove, swab with Weldwood glue along chine, sheers, and stem, then replace panel with the pilot screws. Immediately start driving in the aluminum nails every two inches along chine, stem and transom, and 3 inches along sheer. Anchorfast nails are fine, too, but the glue does the real holding job. Repeat this process for the other side, and for the two bottom panels. Bottom panels extend about 5 inches aft of transom bottom as afterplane. Use a back-up block when nailing into the chine forward of Rib 1, as the kerfs make it somewhat flexible until the glue all sets. Later when turning the boat over, work filler into these kerfs with a putty knife, a good Weldwood and saw dust mix, with water. Knock off the jig now, along with rib ties, and set the hull upright.

After taking pictures of Junior in it, remove the boy, and beg him to let you install the deck dash, followed by the fin battens back to the transom. Install the motor clamp now using plenty of glue, and back this up with the rear clamp board. Avoid nails here, and use clamps. Cut the decks out of the  $\frac{1}{8}$ -inch plywood remaining and lay on with glue and nails. Trim, when dry, along the gunwales, and along fin batten. Plane the fin batten to a vertical plane, so that fin stands erect or vertical



**TOP VIEW SHOWS WIDE BEAM FOR SAFETY**



**SIDE VIEW SHOWS STYLISH LINES · HIGH FREEBOARD**



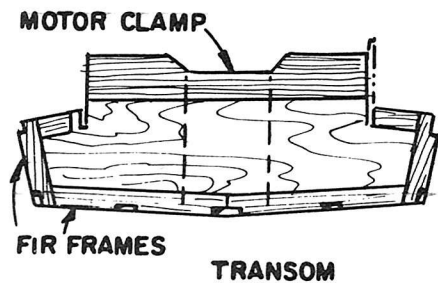
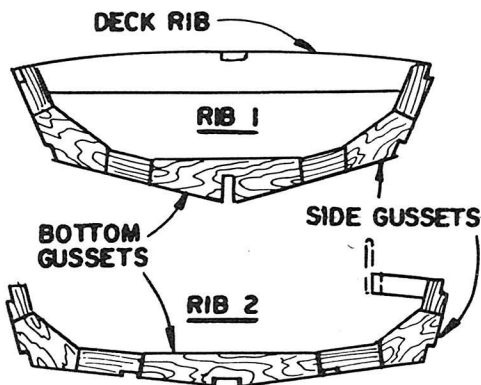
when glued and screwed in next. This fin also braces the transom motor board. Two long screws driven through it into the board, along with generous glue, do the job. Thus you have adequate freeboard for safety, and the new finny look. Screws go every 8 inches along fin into batten. Now place glue blocks along the seams behind the transom, at bottom and sides to assist in waterproofing. Now you can varnish the hull if mahogany, or paint to taste.

Clamp on the 3 hp Evinrude, hook up the choke control, the steering, a quick removal device on drawings, and Junior can take off just like dad does. Watch the gas, because one pull sends the engine into drive, as there is no gear shift. Just aim away from everything, and in idle, the boat maneuvers slowly and surely.

One caution: Do not lean back against the motor at idle, since the boat will be end heavy then. Balance with the bricks. Under all circumstances, an elder should be watching. The boat is capable. Be sure the boy is. It's tremendous fun when all hands know what's what. •

## SPECIFICATIONS

Length .....	6 ft.
Beam .....	35 in.
Depth .....	12 in.
Freeboard .....	9 in.
Weight .....	35 lbs.



## BILL OF MATERIALS

### FIR

$\frac{3}{4}$ "x2"x12"	Ribs-Transom
$\frac{1}{8}$ "x2"x36"	Stem-Forefoot
$\frac{3}{4}$ "x3"x88"	Harpin
$\frac{3}{4}$ "x1"x80"	Fin Battens
$\frac{3}{4}$ "x3"x32"	Dash
	Weldwood Resin Powder

### MAHOGANY

$\frac{3}{4}$ "x4"x22"	Motor Clamp
$\frac{3}{4}$ "x6"x12"	Rear Clamp
$\frac{1}{2}$ "x1"x16"	Sheers-Battens
$\frac{5}{8}$ "x1"x12"	Chines
$\frac{3}{4}$ "x2"x48"	Keelson
$\frac{1}{2}$ "x8"x5"	Fins

### PLYWOOD (Mahogany)

$\frac{1}{8}$ "x30"x80"	(From Flush Door)
(or 4'x8' panel)	
$\frac{1}{8}$ "x12"x33"	Transom
$\frac{1}{8}$ "x12"x20"	Gussets
$\frac{1}{4}$ "x6"x32"	Bottom Gussets

### HARDWARE

1 $\frac{1}{2}$ " No. 7	3 Doz.
1" No. 6	1 Doz.
1 lb. $\frac{1}{2}$ "	Brads
5 lb. $\frac{5}{8}$ "	Aluminum Nails (Planking)

## LARGE SCALE PLANS

with full size half ribs are available for building this boat at \$2.00 per set. Send orders to Henry Clark, 36 Highwood Drive, Dumont, N. J. Specify FB-PEANUT.

HULL IS READY for topside work in this photo. Note built-up bow harpin sections. Difficult bending is eliminated in this way with these jig-sawed fir pieces as shown.

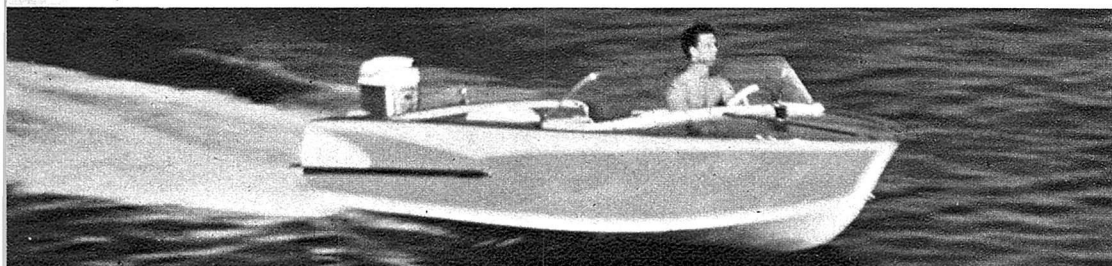


# How To BUILD 20 BOATS

## MALAHINI

By Glen L. Witt, N.A.

A 16-foot outboard runabout with generous beam.



**MODERN STYLING,** a deep vee and a wide beam give Malahini dry, safe characteristics.

**A** GENEROUS SIZE outboard runabout is the Malahini, 15 feet 11 inches in overall length, with an extreme beam of 6 feet 7 inches. She is a particularly versatile boat with the seats being of the floating type. That is, they may readily be removed, providing a flat area 9 feet long, and up to 5 feet 9 inches wide for carrying camping gear. The aft seat could be turned around and placed back to back with the front seat for trolling or for a water ski observer.

The generous vee in the fore portion, and the wide beam, make for a dry, safe boat. The construction is rugged, and intended to "take it." The self-bailing motor well prevents any sudden wave or backwash from entering the boat.

All lumber used should be first-grade white oak, dark red Philippine mahogany, or Sitka spruce. All plywood must be intended for marine or exterior use. All joints throughout the construction should be glued with resorcinol or urea-resin glue. All fastenings should be bronze, hot-dipped galvanized, or brass.

### BUILDING INSTRUCTIONS

**FRAMES:** The frames are fabricated from 1-inch material: oak, mahogany, or spruce. The bottom and side frame members are joined with a  $\frac{3}{8}$ -inch plywood gusset on either side of the frames. The bottom frame members at No. 1, No. 2, and No. 3 are in single width from chine to chine. The frame at No. 4 has the two half frame members joined together by a floor timber of the same material as the frame. The plywood gussets are assembled to the

frames with glue, and nailed with annular thread type nails. The floor timber on No. 4 is assembled with a minimum of five  $1\frac{1}{2}$ -inch No. 8 screws per member. The notches for the various members may be cut after frame assembly.

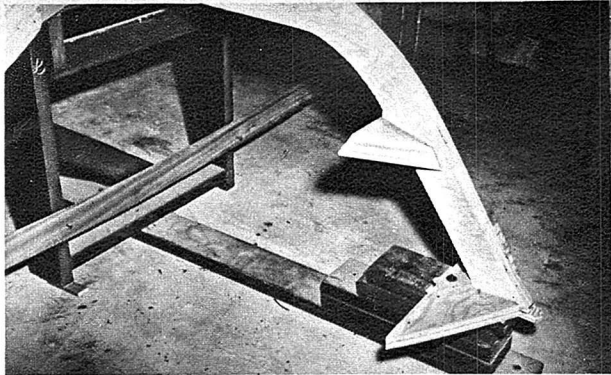
**TRANSOM:** The  $\frac{3}{4}$ -inch plywood transom is framed with 1-inch oak, mahogany, or spruce. All notches must be cut into the framing members before assembly to the plywood transom. In assembly, fasten the frame to the transom with  $1\frac{1}{2}$ -inch No. 8 screws, spaced approximately 6 inches apart.

**STEM:** The stem is built up from two laminations of  $\frac{3}{4}$ -inch thick exterior plywood. In assembly, coat the mating surfaces liberally with glue, and fasten together with  $1\frac{1}{2}$ -inch No. 8 screws, spaced a maximum of 6 inches apart.

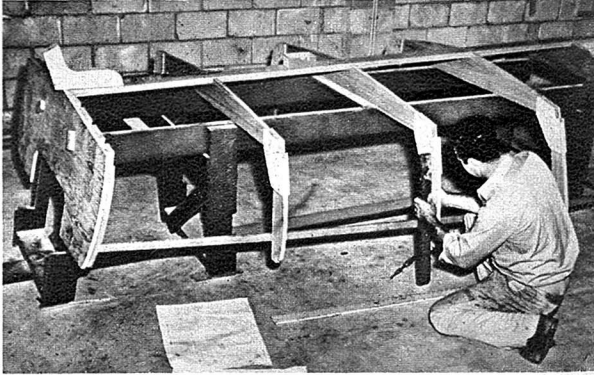
**BREASTHOOK AND CHINE BLOCKING:** These members are built up from two layers of  $\frac{3}{4}$ -inch exterior plywood. The breasthook is used between the sheer clamps, and the chine blocking between the chines at the stem junction.

**TRANSOM KNEE:** The transom knee is fabricated from three laminations of  $\frac{3}{4}$ -inch plywood. In assembly, the knee bolts to the keel and transom with 5/16-inch carriage bolts.

**BUILDING FORM:** Details for the building form are given in the plans. Basically, the form consists of two longitudinal setup members that are level, both lengthwise and athwartships. These are supported on legs, the whole being anchored to the floor. The frames are



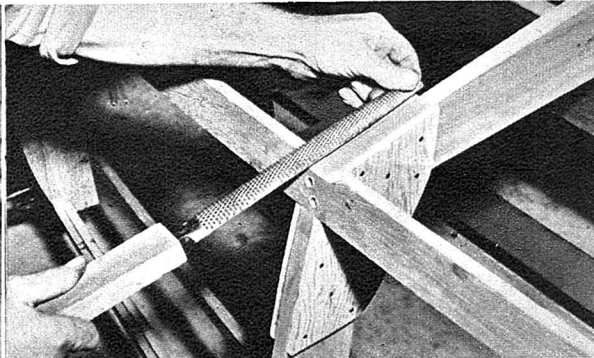
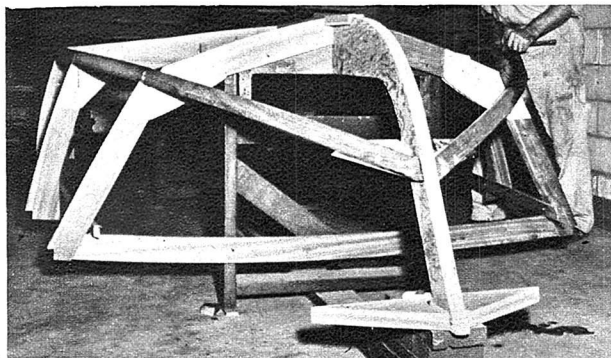
**STEM, breasthook and chine block assembly is mounted to No. 4 frame. Note bolting.**



**PLUMB each frame on leveled building form, then brace to form to prevent movement.**

**CHINE members are fastened at stem, sprung about hull. Chine angles across blocking.**

**BEVEL chine with wood rasp at each frame for easy fairing. Follow contour of frame.**



mounted bottom side up on the form, spaced per the dimensions shown, and accurately centered with a chalk line. The transom may be located by the use of the knee bolted to the keel. The height of the breasthook-stem assembly is carefully blocked to the dimension noted.

**KEEL:** The keel is a 1x4-inch member of oak, mahogany or spruce, laminated on the inside with  $\frac{3}{8}$ -inch plywood. The keel is fitted into notches at the frame and transom, and fastened to them with 2-inch No. 10 screws.

**CHINE LOG:** The junction of the side planking and bottom planking is called the chine point, and the backing member is the chine log. This member is full length 1x2-inch oak or spruce. Fit into the frame notches, coat with glue, and fasten with 2-inch No. 10 screws.

**SHEER CLAMP:** The junction for the side planking and decking is the sheer, and the backing member is called the sheer clamp. Sheer clamps are built up from two laminations of  $\frac{5}{8}$ x1 $\frac{1}{4}$ -inch mahogany or spruce. The first layer is sprung around the hull, followed by the second layer, liberally coating the initial one with glue.

**FAIRING:** All of the members; sheer clamp, chine, keel, stem, and transom must be beveled or faired to allow the planking to lay flat on all areas. Care should be taken in the after section of the hull to assure that the running lines are true and straight. While fairing, always stand back from the hull and sight across the lines, to eliminate any humps or bumps in the fairing process.

**BOTTOM BATTENS:** The bottom 1x2-inch oak or mahogany battens are notched into each frame and the transom. They are located as noted per the drawings, and anchored in place with 2-inch No. 10 screws.

**LIMBERS:** Limber holes, to allow all bilge water to drain aft, should be notched on the outboard side of all longitudinals.

**SIDE PLANKING:** The  $\frac{1}{4}$ -inch side planking should be in full length. Shorter panels can be used, butt joined per the details. Lean the plywood panel against the side of the hull, and scribe around its extremities. Remove the panel and cut roughly to shape with a fine-tooth saw. The portion that will butt join with the bottom planking from approximately frame No. 4



## BILL OF MATERIALS

### OAK, MAHOGANY OR SPRUCE

Frames, transom—40 random bd. ft.,  
1" stock  
Keel—1 piece 1"x4"x13'  
Battens—2 pieces 1"x2"x12'  
2 pieces 1"x2"x10'  
Chine log—2 pieces 1"x2"x18'  
Sheer clamp—4 pieces  $\frac{5}{8}$ "x1 $\frac{1}{4}$ "x18'  
Intermediate deck beam—1 piece  
1"x4"x5'  
Deck battens—2 pieces 1"x2"x5'  
Strongback—1 piece 1"x3"x6'  
Motor well longitudinals—2 pieces  
1"x4"x3 $\frac{1}{2}$ '  
Aft well deck beam—1 piece 1"x6"x3'  
Blocking, cleats—as required  
Floorboard battens—2 pieces 1"x2"x9'  
**D. F. PLYWOOD AB, EXT.**  
Frame gussets, keel laminations—1 piece  
 $\frac{3}{8}$ "x4"x8'  
Transom, stem, chine blocking,  
breasthook—1 piece  $\frac{3}{4}$ "x4"x8'  
Floorboards, seats—3 pieces  $\frac{3}{8}$ "x4"x9'  
Seat brackets—1 piece  $\frac{3}{4}$ "x4"x6'  
**MAHOGANY FACED PLYWOOD EXT. AA**  
Decking—2 pieces  $\frac{1}{4}$ "x4"x8'  
**D. F. PLYWOOD AA MARINE**  
Planking, side—2 pieces  $\frac{1}{4}$ "x3"x18'  
Planking, bottom—2 pieces  $\frac{3}{8}$ "x3"x16'

### MAHOGANY

Carlings—2 pieces  $\frac{1}{2}$ "x4"x9'  
Dash—1 piece 1"x7"x6'  
Lower bumper rail—2 pieces 1"x4"x7'  
**MISCELLANEOUS**  
Motor well brace—1 piece D. F. 2"x4"x3'  
Motor well plywood—cut from scraps  
of planking

### FASTENINGS

Screws: flat head, wood, bronze or  
hot dipped galvanized.  
 $\frac{3}{4}$ " # 8—3 gross  
1" # 8—4 gross  
1 $\frac{1}{4}$ " # 8—1 gross  
1 $\frac{1}{2}$ " # 8—1 gross  
2" # 10—1 gross  
3" # 14—3 dozen  
Carriage bolts: complete w. nuts,  
washers, bronze or hot dipped  
galvanized.  
 $\frac{5}{16}$ "x4" —4 required  
 $\frac{5}{16}$ "x7" —2 required  
 $\frac{1}{4}$ "x2 $\frac{1}{4}$ "—2 required  
Nails: annular ring type, bronze  
or monel 1" —2 lbs. 1 $\frac{1}{4}$ "—1 lb.  
Glue: plastic resin type Weldwood or  
comparable volume resorcinol  
type—10 lbs.

forward, must be fitted along the chine. The balance may be left long for subsequent trimming. Fasten the planking to all members, per the directions given in the fastening schedule.

**BOTTOM PLANKING:** The planking for the bottom is optionally  $\frac{1}{4}$ -inch or  $\frac{3}{8}$ -inch plywood. For the rougher usage, the  $\frac{3}{8}$  inch in full length is recommended. Fit the bottom planking carefully along the part that will butt join with the side planking. Aft of this point, the bottom planking will lap the side planking to be planed off after installation. Fasten per the fastening schedule.

**OUTER KEEL:** The outer keel of 1-inch oak, mahogany or spruce is fastened over the joint of the bottom planking.

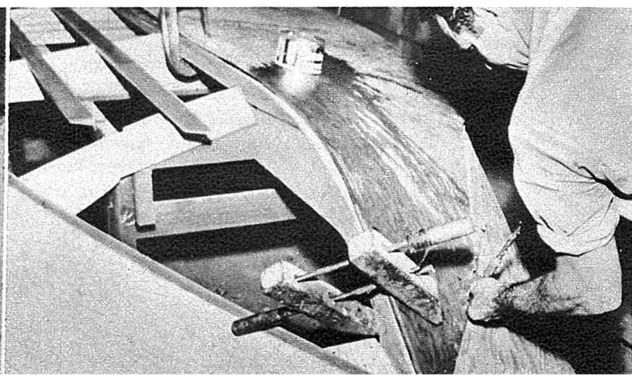
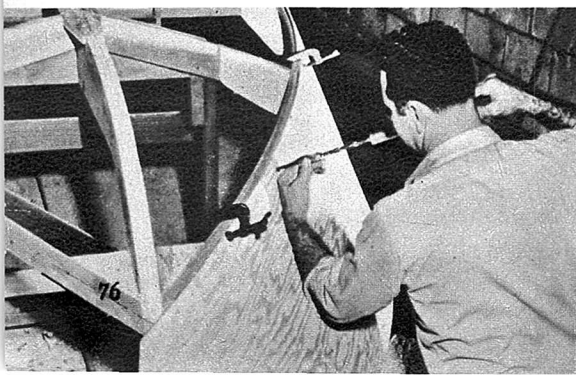
**FIBERGLASSING:** The fiberglassing of any fir plywood hull is a distinct advantage to prevent checking so common with fir plywood. A complete fiberglassing kit can be obtained from Glen L for covering the bottom only or for covering the bottom, sides, and transom. These kits provide complete material for the job including brushes, squeegee, acetone, resin, cloth, etc.

**SPRAY RAIL:** The 1x1 $\frac{1}{4}$ -inch spray rail covers the junction of the side and bottom planking, and is fastened with 2-inch No. 10 screws, spaced 12 inches apart.

**INTERMEDIATE DECK BEAM:** The intermediate deck beam is installed as shown in the drawings, cut from 1-inch mahogany to the same crown as frame No.

**FASTEN** panel by clamping along chine at transom. Attach along chine line first.

**BOTTOM** panel clamped along centerline of stem. Attach forward from transition point.



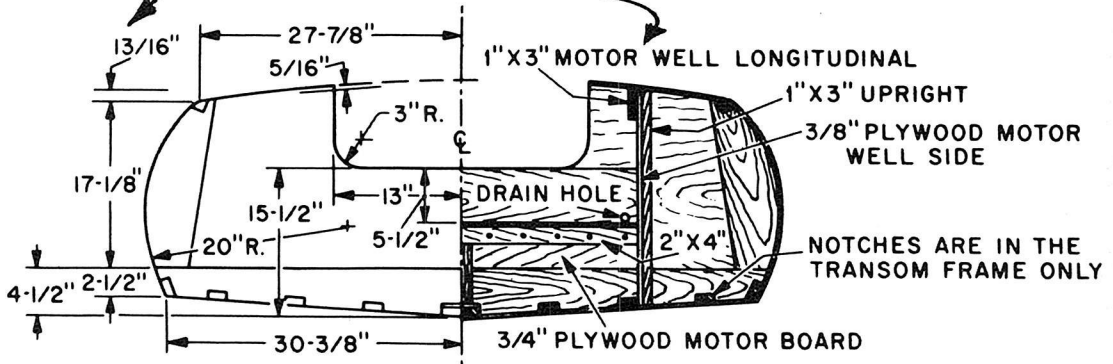
# PLAN SET AND FULL SIZE PATTERNS

are available for building this boat at a cost of \$18.25. FRAME KITS which include the above are \$96.00 (plus shipping costs). Illustrated Malahini plans sell for \$9.25. Send all orders to Glen L. Marine Designs, 9152 E. Rosecrans, Bellflower, California. Specify plan FB-MALAHINI in whatever form.

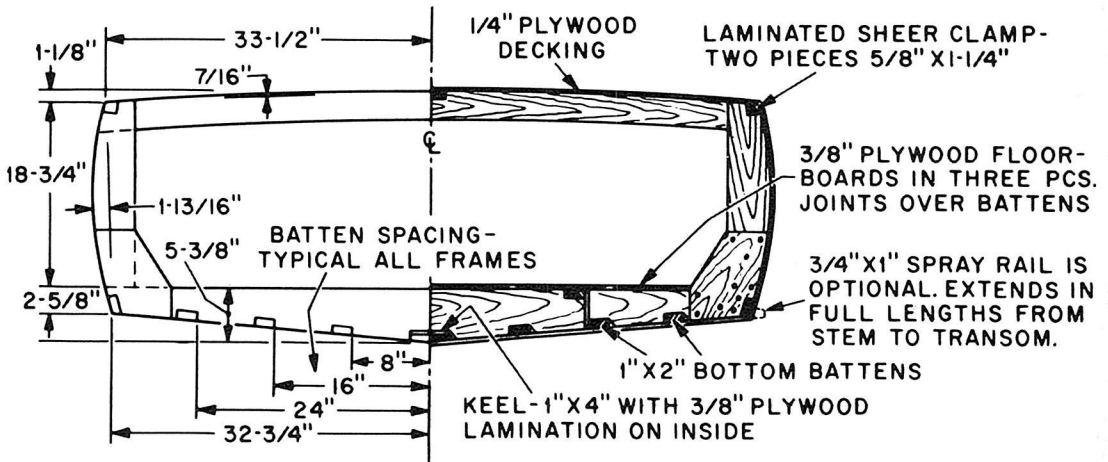
## TRANSOM

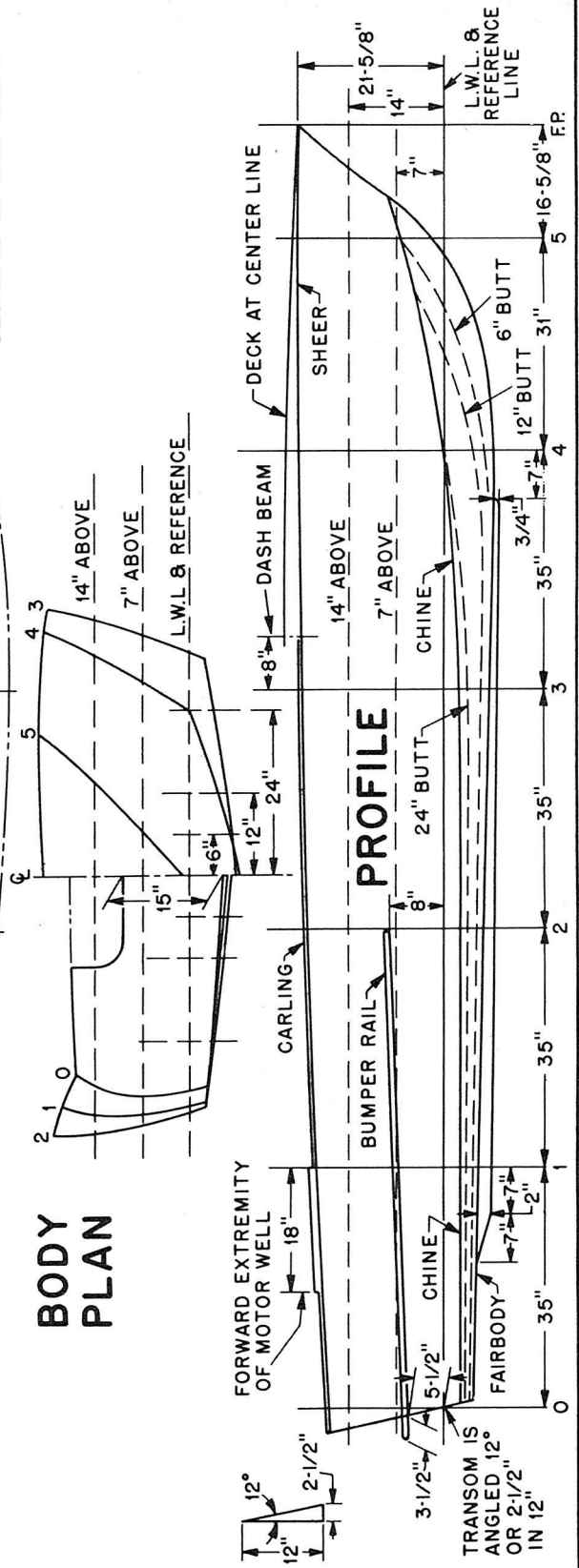
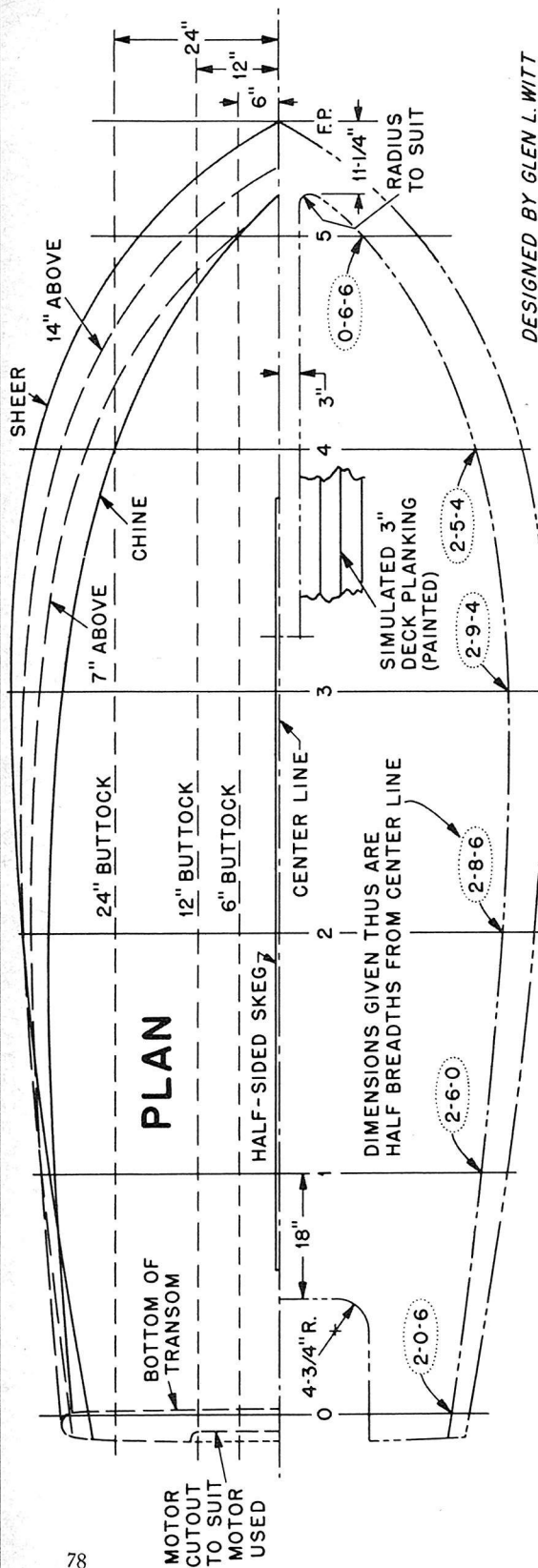
TRANSOM IS CUT FROM 3/4" PLYWOOD- FRAMED WITH 1" OAK OR MAHOGANY

THIS DIMENSION IS THE CROWN ON DECK BEAM



## FRAME NO.1

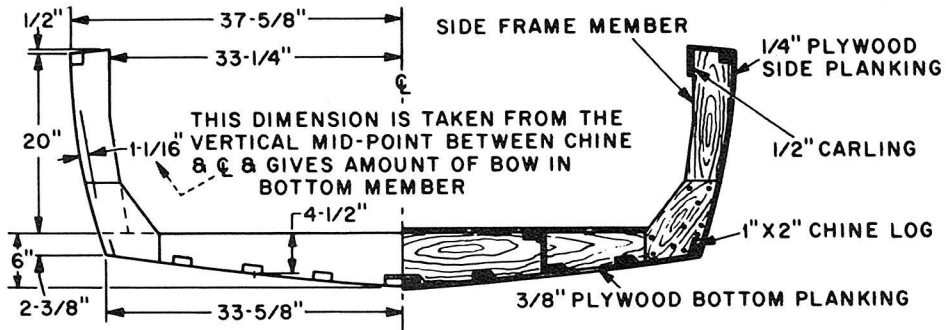




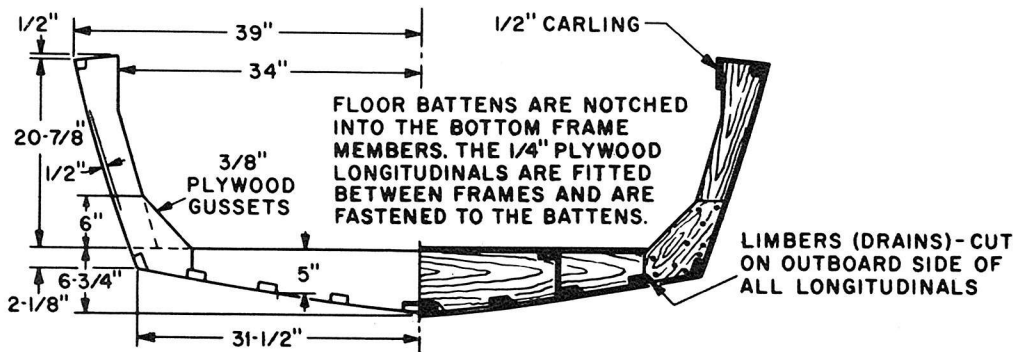




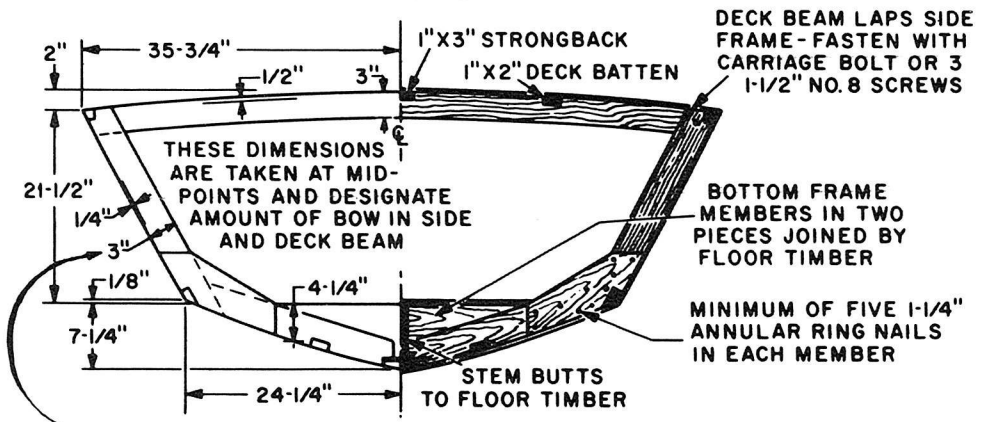
## FRAME NO. 2



## FRAME NO. 3



## FRAME NO. 4



MINIMUM OF 3" WIDTH ON BOTH- SIDES & BOTTOM MEMBERS AND DECK BEAMS- (TYPICAL OF ALL FRAMES)

4. Fasten to the blocking on the sheer, as indicated.

**CARLING:** The carling is the member that forms the longitudinal extremity of the cockpit area. This 1-inch mahogany member extends from the transom to the No. 4 deck beam.

**DASH BEAM:** The dash beam of 1-inch mahogany, cut at the same crown as frame No. 4, is fastened between the carlings with 2-inch No. 10 screws.

**MOTOR WELL:** The motor well is fabricated from  $\frac{3}{8}$ -inch plywood sides that extend from the batten at the bottom of the boat to the decking longitudinal member, and is fastened to a 1x3-inch transom upright, as indicated. On top of the transom knee, a 2x4-inch Douglas fir brace is bolted to the transom with  $\frac{1}{4}$ -inch bolts.

**STRONGBACK:** The 1x3-inch strongback is located on the centerline of the boat, and is notched into each of the frames in each of the deck beams.

**DECK BATTENS:** The 1x2-inch mahogany or spruce deck battens are located per the drawings, and notched into the beams similarly to the strongback.

**DECKING:** The decking must be faired to allow the decking to mate to all members. Forward decking is  $\frac{1}{4}$ -inch

mahogany-faced plywood. The decking should extend along the side decks as far as possible, from a 4x8-inch panel. At this point, it is joined to the side decking with a butt joint. Use a  $\frac{3}{8}$ -inch butt block, extending 3 inches to 4 inches to the side of the joint. The decking is nailed in place per the fastening schedule. Before it is laid, the decking may be grooved to simulate planking with a power saw, table saw, or router.

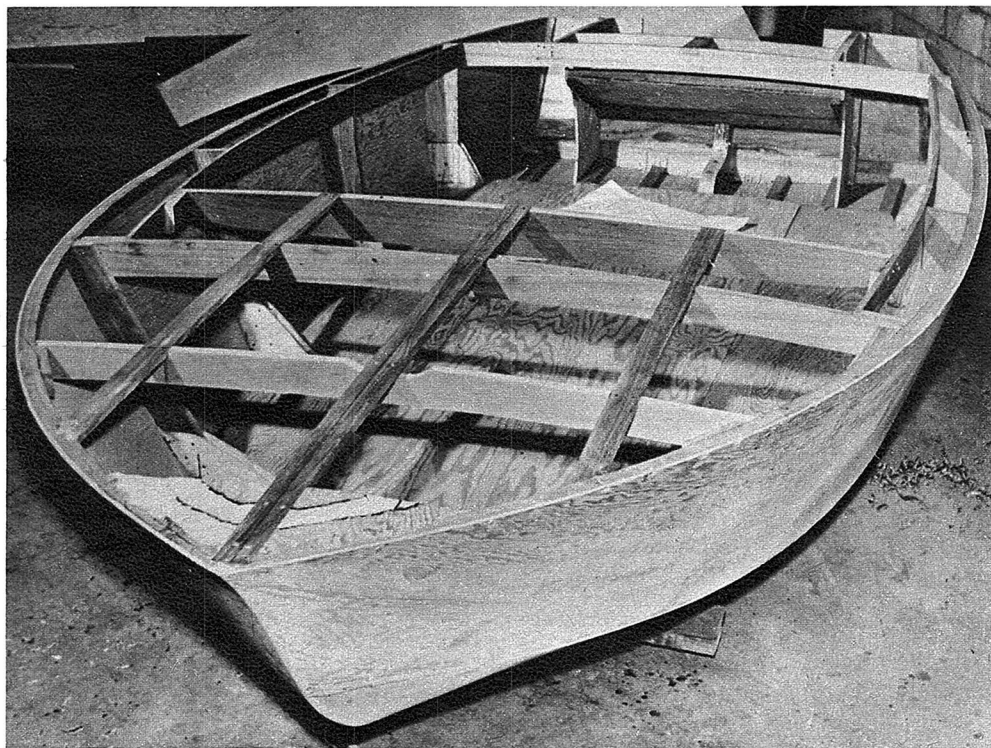
**FLOORBOARDS:** The  $\frac{3}{8}$ -inch floorboards are in three parts. They are fitted around the frames to provide a flush area in the cockpit, resting on battens notched into the frames.

**SEATS:** The seats are detailed in the drawings. These consist of  $\frac{3}{4}$ -inch plywood angle-brackets with  $\frac{3}{8}$ -inch sides or  $\frac{1}{2}$ -inch sides and bottoms.

**STEERING AND CONTROLS:** The steering and remote controls should be sent to the forward cockpit to suit the type of motor and controls used.

**GAS TANK:** The gasoline tank should be stored under the aft deck area. On the opposite side of the gasoline tank, the battery box should be mounted on a sheet of  $\frac{3}{8}$ -inch plywood, and enclosed in a fiberglass box. •

**BASIC framework of decking completed. Carling members, strongback battens in place.**



# How To BUILD 20 BOATS

## LAZYBONES

By Donald H. Smith, SSCD

This comfortable 24-ft. sloop accommodates two.

**B**EFITTING HER NAME, Lazybones is a simply rigged, small cruising sloop with an auxiliary engine. She will not be a fast sailer and is capable of only seven knots under power. However, her very significant virtues relate to her simplicity of rig and maximum comfort for her small size. She carries 293.4 square feet of sail with 218.4 in the main. Her gaffheaded rig will require a minimum of effort to handle, even for the novice.

From the standpoint of accommodations, Lazybones has a small cabin, housing two berths forward, a small toilet enclosure, and a galley. Her cockpit is roomy with two longitudinal seats on either side. Both the tiller and engine controls are within easy reach when sitting on either seat. Under the seats are lockers for the multitude of gear which eventually finds its way aboard small craft of this type. Her forward hatch is a little unusual for this type of small sailboat but is there for good reason. In any cabin boat, especially where there is a galley and stove, more than one means of exit should be provided.

Lazybones is of stout seagoing construction, which features a round bilge and lead keel. She is not a difficult boat to build, but her construction will be time consuming in that she is carvel planked and the planks must be carefully spiled and shaped. She has steam-bent oak frames and some hefty deadwood in her keel assembly.

The first step in building this little sailer is to loft the designed lines to full size. From the lines, fully reproduced and faired in full size, it is possible to make templates of cardboard or Masonite which will enable the construction of forms. The forms are made of spruce and are to correspond in shape to the stations on the lines drawings. However, appropriate deductions must be made for plank, frame, and ribband thickness. This in addition to the following phases of construction are thoroughly covered in many books on the subject of boat building. Therefore, this description will describe the construction process in general terms and for more

specific details, the builder is referred to one or more of the readily available texts.

Lazybones is to be built in an upright position and her stem, keel, deadwood, and horn timber must be set up and securely shored once the individual components are completed and assembled. The entire "backbone" assembly will require the cutting of a rabbet at the fairbody line to receive the planking as shown in the construction drawings. When the "backbone" has been set up plumb and straight, the forms or molds can be fastened to the keel. These, too, must be set up plumb and shored into place until the ribbands are sprung into place. Following the ribbands come the steam bent frames which are spaced on 8-in. centers as shown in the plans.

The planking is applied next and this is an operation requiring considerable care. An outgauge of about 3/32 inch should be left to take the caulking. The inside edges of the planks must be tightly fitted to avoid any leaks. Butt blocks at plank ends must be staggered so that no two occur within the same frame space and in this respect, the greater the degree of staggering, the better the job will be. Attention to such details will assure a stiff, strong craft.

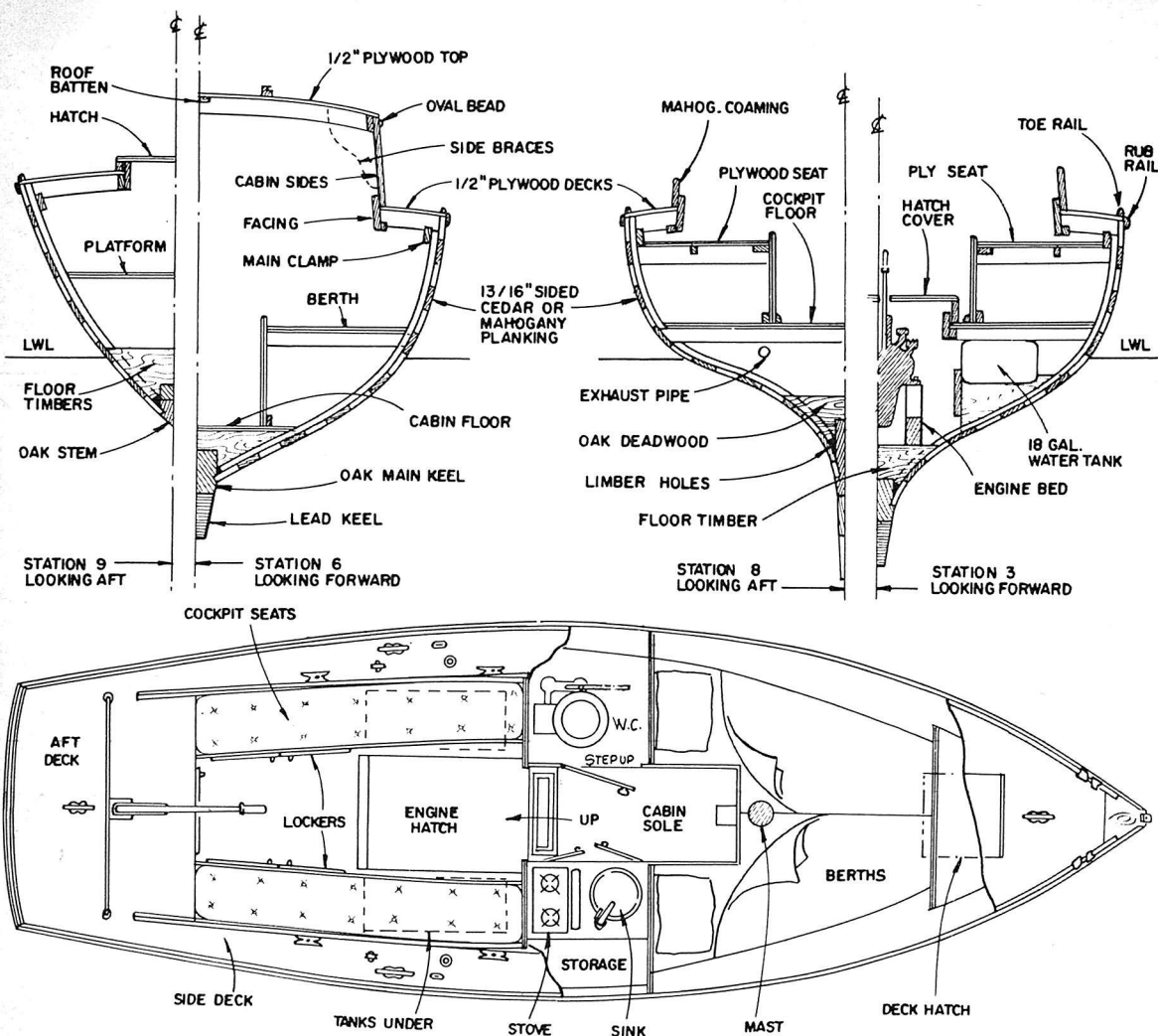
When the hull planking is completed, the interior joinery and decking can begin. The berths, galley cabinet and floor can be installed. This is the time for locating the mast-step and engine bed logs. After laying out the propeller shaft lines, a hole may be augered through the deadwood and stern post to accommodate the shafting, stern bearing and stuffing box. The tanks can be installed at this point, prior to installation of floor beams and the cockpit sole.

Next comes the cabin structure, coamings, and bulkheads, in addition to deck beams and decking. The deck and cabin roof are to be canvas covered as both are plywood. The canvas will be set in marine glue and painted with brushing cement when the glue is dry. A hole must be made in the cabin roof, as shown, in which to

Drawing by Frank Schwartz







mount the spar. This will complete the basic construction of Lazybones.

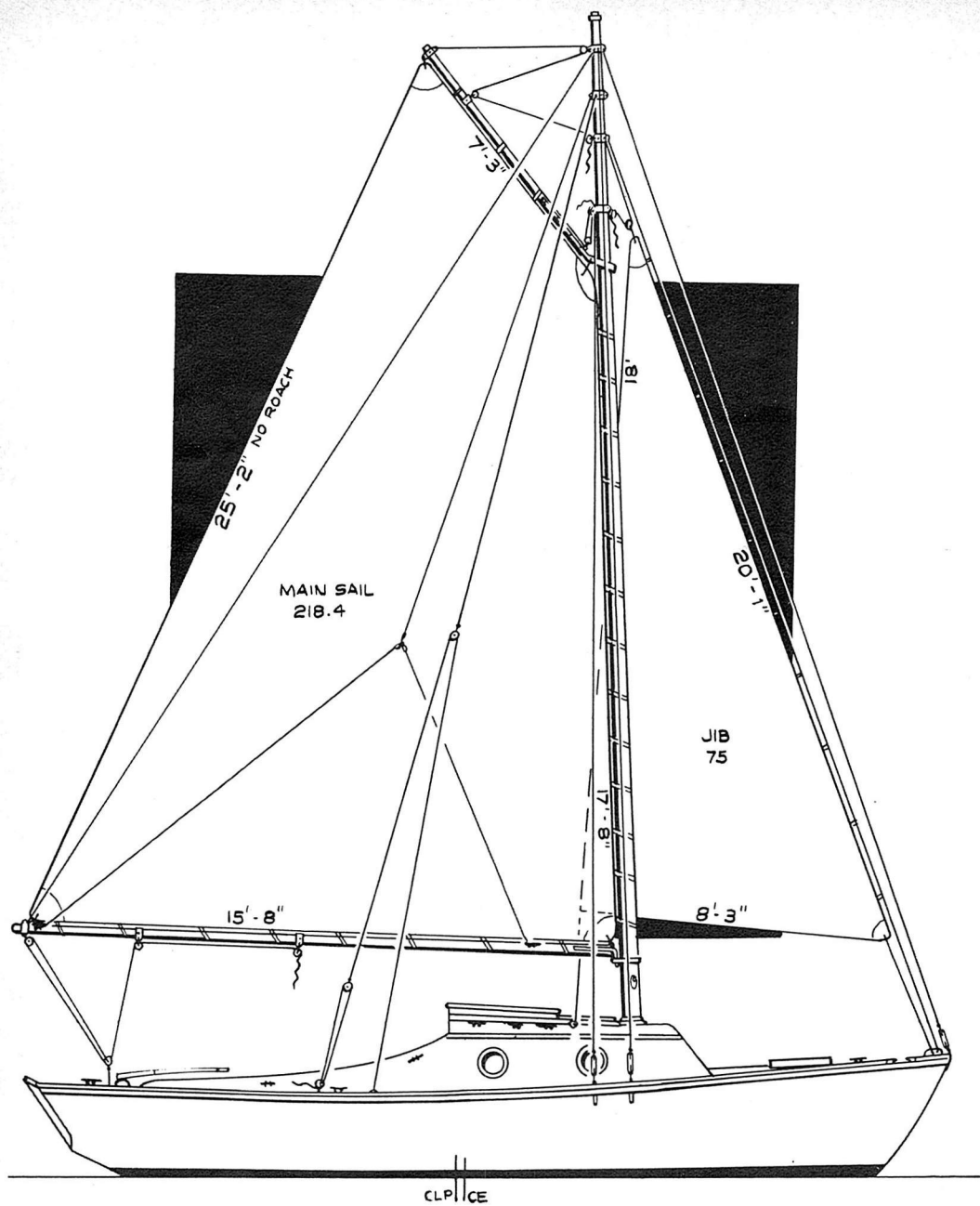
While a solid spar, boom, and gaff are shown, it is entirely feasible to build up the members in the absence of good clear straight stock in suitable lengths. In addition to the possibility of laminated or built up spars and the like, it may even be worthwhile to consider metal spars which are becoming increasingly popular. The entire rigging problem is one which is often resolved by the owner on the basis of personal preference or experience. In this respect, the primary requisites are to carry the amount of sail specified cut to the dimensions shown.

The outfitting of this craft is another optional matter but in addition to the necessary standing and running rigging, blocks, cleats, and so forth, it will be required to

install mooring cleats, chocks, and anchor facilities. Hull painting and general finish are also optional items but it is recommended that the cabin and spars be finished bright, the decks gray, a white hull, and green boot top.

Going back to the basic work, the fastenings should be Everdur bronze or some other nonferrous metal. Drift bolts of the diameters shown should be used to fasten the keel assembly components as well as to secure floor timbers to the keel. Bronze through-bolts are to be employed in the way of the lead keel as shown. Frames will be fastened to floor timbers and clamps with  $\frac{3}{16}$ -in. through-bolts while the planking is to be secured to the frames with  $1\frac{1}{2}$ -in. No. 10 flathead wood screws properly countersunk. The remainder of the construction, especially as pertains to in-





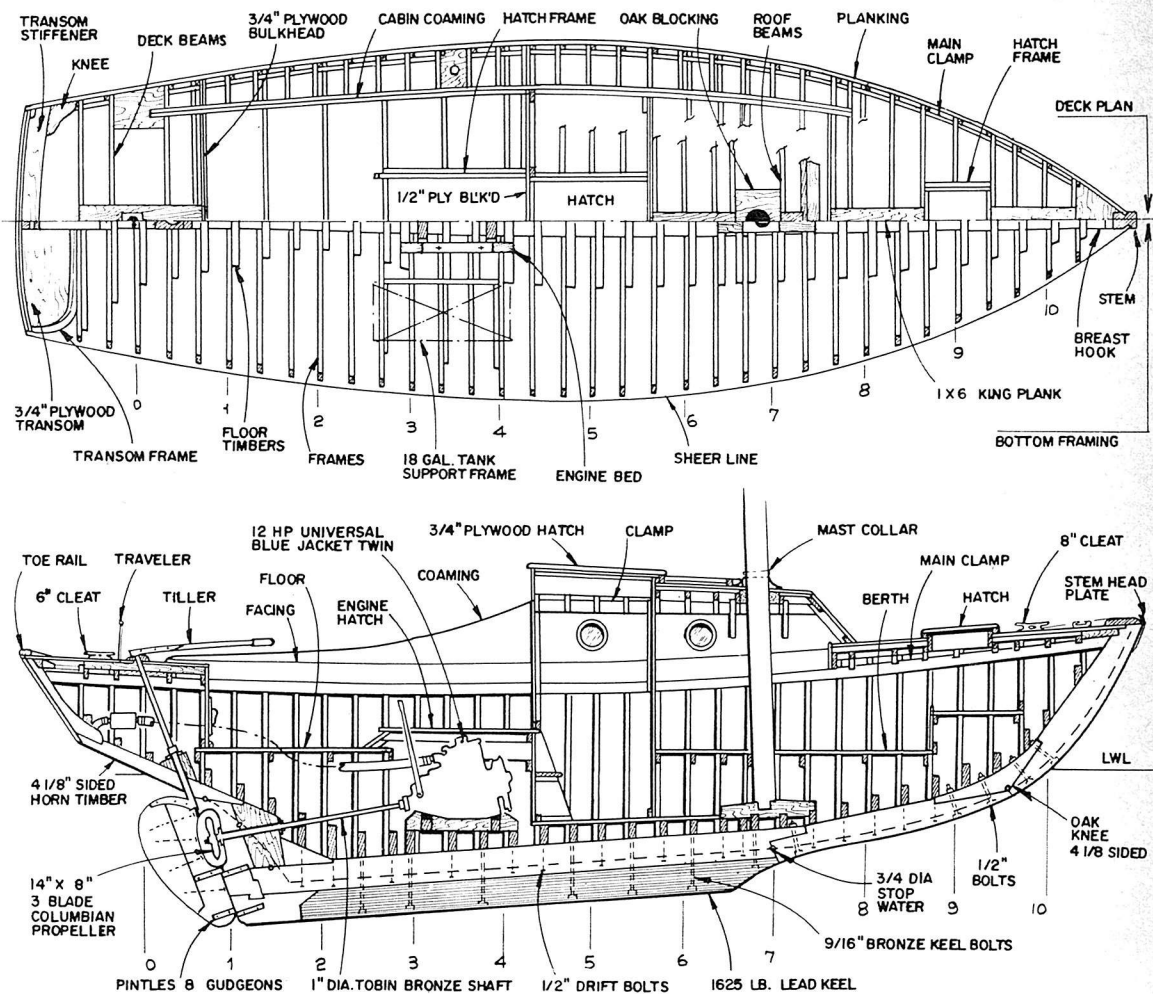
terior joinery, is simply straightforward boat carpentry calling for conventional recommended fastening sizes and types.

The engine is a Universal Blue Jacket Twin which will supply a dependable 12 horsepower to propel Lazybones when caught in the flats or when approaching the mooring. The galley is shown with a small sink and two-burner marine stove. A marine toilet is installed in an enclosure opposite the designated galley area. This enclosure is somewhat on the cramped side, admittedly, and if one is willing to sacrifice

a degree of privacy, a draw curtain can be substituted for the bulkhead and door. This will afford a little more freedom of movement in this area of the cabin. •

**LARGE SCALE BLUEPRINTS** are available which will simplify the building of this boat. These sell for \$14.00 per set. Send all orders to Donald H. Smith, SSCD, 484 Everett St., Crystal Lake, Ill. Please specify Plan FB-LAZYBONES.





## BILL OF MATERIALS

### SIDED WHITE OAK

Keel—8" as per plans  
 Stem—4 1/8" as per plans  
 Stem knee—4 1/8" as per plans  
 Horn timber—4 1/8" as per plans  
 Floor timbers—1 1/2" as per plans  
 2 1/4" under engine beds  
 Mast step—5 1/2" as per plans  
 Engine beds—2 1/2" as per plans

### WHITE OAK

Deadwood, stern post—faired as on drawings  
 Rudder—blade doweled as indicated  
 Frames—1" x 1 1/4" as per plans, steam bent

### OAK

Floor beams—1" x 2 1/2" as per plans  
 Main clamp—1 1/8" (sided) as per plans

### SIDED MAHOGANY

Planking—1 3/8" as per plans (or use boat cedar)  
 Coaming, cabin sides—1" as per plans  
 Facing—1" as per plans

### MARINE PLYWOOD

Bulkheads, floors, berths—3/4" as per plans  
 Decking, cabin roof—1/2" canvas covered

### MISCELLANEOUS

Deck beams—1" x 3" fir or yellow pine  
 Roof beams—1" x 3" spruce  
 Interior joinery—3/4" sided fir frames, plywood cabinets, berth tops, etc.

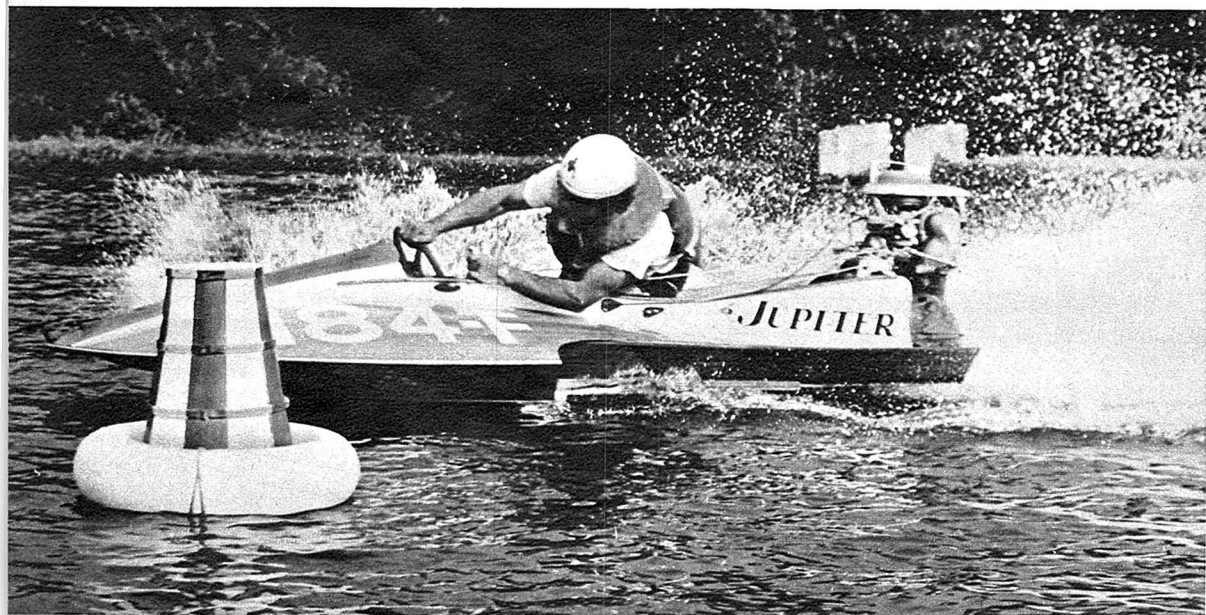
Note: "sided" refers to a finished piece of lumber. Although lumber will not retain exact dimensions after being sided, order by original size desired.

# How To BUILD 20 BOATS

## JUPITER

By Hal Kelly

This 9-foot 10-inch semi-Cabover hydro is terrific.



ROUNDING the buoy in a tight turn with the throttle almost wide open and sponsons high.

**D**ESIGNED for the Mercury Mark 20-H, Champion Hot Rod, and the "A" "B" "C" Konig or Anzani, Jupiter is a semi-Cabover type that just about flies over the water, her sponsons hardly touching. Incorporating the best points of both Cabover and conventional three point design, she is great on rough water, going through the "stuff" other drivers have to back off for. She has excellent turning characteristics in both rough and smooth water, and she's very quick at accelerating out of a turn.

Although Jupiter is an "out and out" racing hydro, she will take any pleasure motor from 7 hp up. The weight of the motor rather than the hp will determine how large a motor she will take; a 110-pound motor is about the limit. The transom height for motors without racing lower units should be 17½ inches. Most important is getting the proper propeller for your

outfit. This must be done before you try hopping up your motor. If you will give me the motor make, year and hp, I will tell you the make and kind of propeller you should have.

Before building Jupiter, read the instructions, study the step-by-step pictures and then go over the drawings. If you are new to boat building, I would suggest doing this several times. All rib drawings are full size, so take all measurements directly from the drawings for rib dimensions. All framework is of Sitka spruce or white cedar, and has been kept to two thicknesses ½ inch and ¾ inch, with the exception of the "built-up" stem which is made up of three pieces of ¼-inch by ¾-inch wood laminated together.

Since most mahogany plywood comes in 4 feet by 8 feet, I listed this size in the bill of material. This will have to be glued up to make the main girder, and the deck

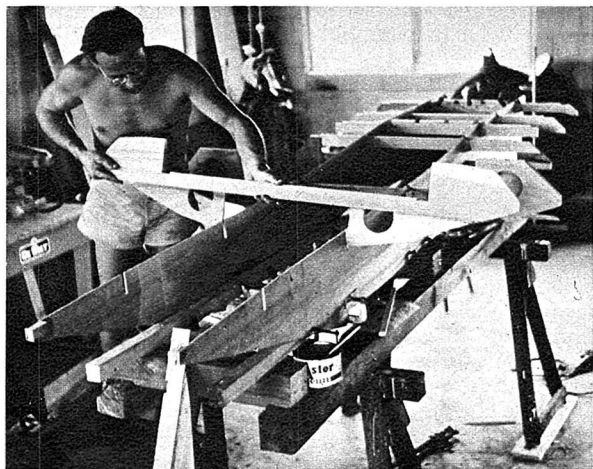
planking. See drawing for the best method to tackle this job. The girders are pieced up front and the decking near the back. Most lumberyards don't want to do it or charge too much to rip the battens, etc., to size, so I have just listed the best plank size to order. All battens, etc., can be ripped to size with a small table saw. If you don't have one, I suggest you borrow a friend's for one evening; that's about all the time it will take.

Due to space limitations only half of each rib is shown, but since the ribs are symmetrical, each side being the same shape, this will offer no problem. There are 8 ribs and a motor mount. The 8th rib is fastened in place last. Cut out all your rib components and place them on the full size rib drawings using  $\frac{3}{4}$ -inch No. 16 Anchorfast nails to secure the  $\frac{1}{4}$ -inch plywood to the ribs. A piece of thin wax paper or cellophane under the ribs will keep the glue off your plans. Weldwood glue is used throughout. Rib No. 1 is made from  $\frac{1}{2}$ -inch thick spruce with two  $\frac{1}{4}$ -inch plywood pieces glued and nailed to it, to form the deck bracing. Since the main girders are spaced the same distance apart (16 inches) the full length of the boat, all deck beams are exactly  $16\frac{1}{2}$  inches apart, as they straddle the main girders. Rib No. 2 is cut from  $\frac{1}{2}$ -inch spruce with deck bracing fastened in place. Note the deck bracing has lightening holes drilled in them before being fastened to the rib. Rib No. 3 is also  $\frac{1}{2}$ -inch spruce with lightening holes; this whole rib is backed with  $\frac{1}{4}$ -inch plywood. The plywood is glued and nailed in place with  $\frac{5}{8}$ -inch No. 16 Anchorfast nails.

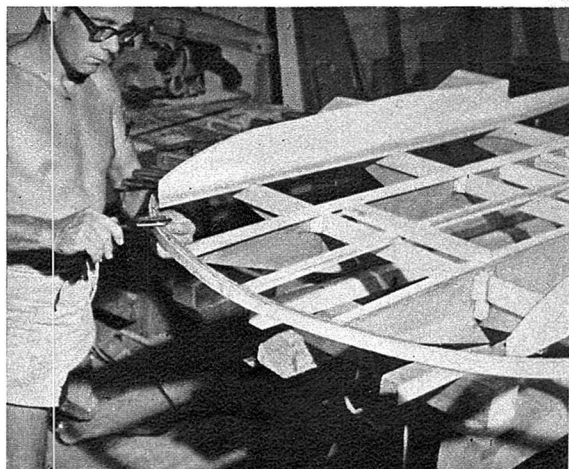
Ribs 4, 5, 6, and 7 are made of  $\frac{3}{4}$ -inch spruce. Note that Rib No. 5 does not go beyond the bottom chine, and is notched for all battens, etc. It is to this beam that the bottom is pieced and nailed. The reason for piecing the bottom at this rib is that with the sharp bend in the bottom at this point, it would be difficult to keep the last 30 inches of the bottom flat, using an unbroken span of wood over this hump. It is vital to keep the rear 30 inches of the bottom perfectly flat. The motor mount is made up of  $\frac{1}{2}$ -inch thick plywood. The upper part is beefed up with a  $\frac{1}{2}$ -inch thick piece of spruce. This mount is 16 inches wide and slips between the girders, and is notched for the battens.

**Main Girders:** This is the main trunk of your boat and all the ribs sprout from it like the branches of a tree. Both girders must be the same shape and so are cut together with all the necessary notches for the ribs cut into them. Stand on edge two 2x3's and fasten them to a suitable base. Make sure they are parallel to each other and are 16 inches apart, outside measurement. The girders are clamped to the outside of the 2x3's, level and square. When the girders are level and true, it is best to temporarily screw them to the 2x3's.

The motor mount is first on the agenda; the girders are screwed to it. The rest of the ribs are slipped in place with glue and  $1\frac{1}{4}$ -inch steel brads. All ribs are set  $\frac{1}{2}$  inch below the bottom of the girders, to make room for the two battens that run the length of the hydro. The girders are glued and fastened to these battens with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails, and the battens in



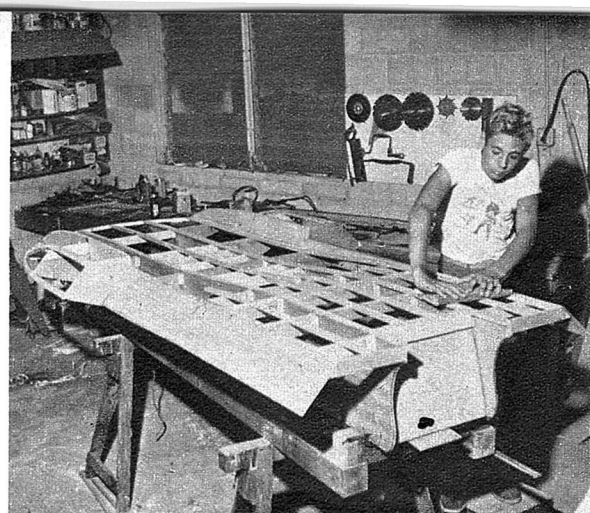
**RIBS** are slipped into notches, glued and fastened with glue blocks,  $\frac{1}{4}$ -in. wire nails.



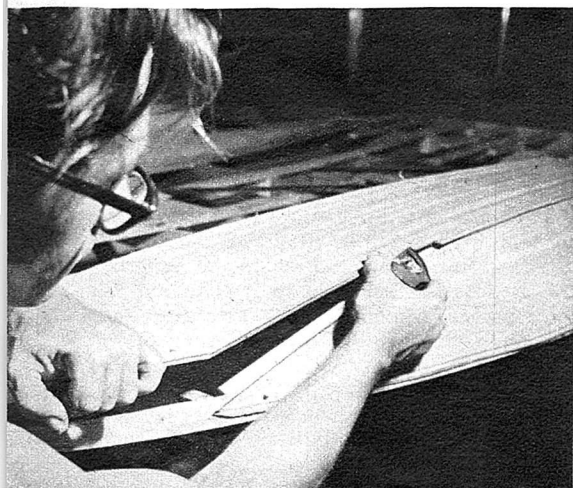
**LAMINATED BOW** piece is three pieces of  $\frac{1}{4}$ -in. spruce, held to ribs with  $1\frac{1}{4}$ -in. screws.



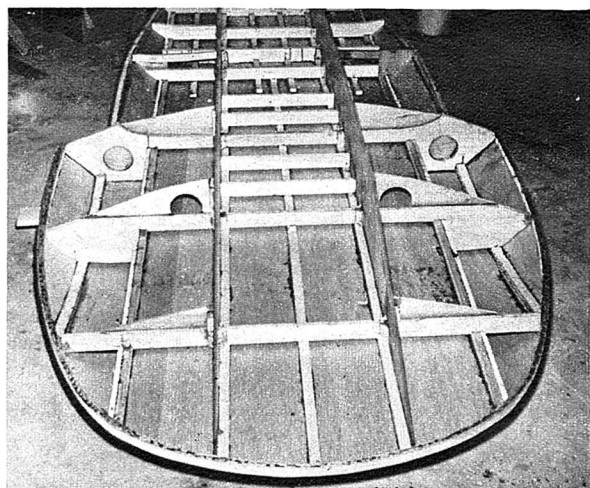
**FAIRED** and ready for planking. Non-trip behind sponsons requires careful fairing.



**MAKE SURE** flat section is really flat before fastening plywood planking in place.



**SPONSON** planking is next. Carefully fit before gluing and fastening. Note overlaps.



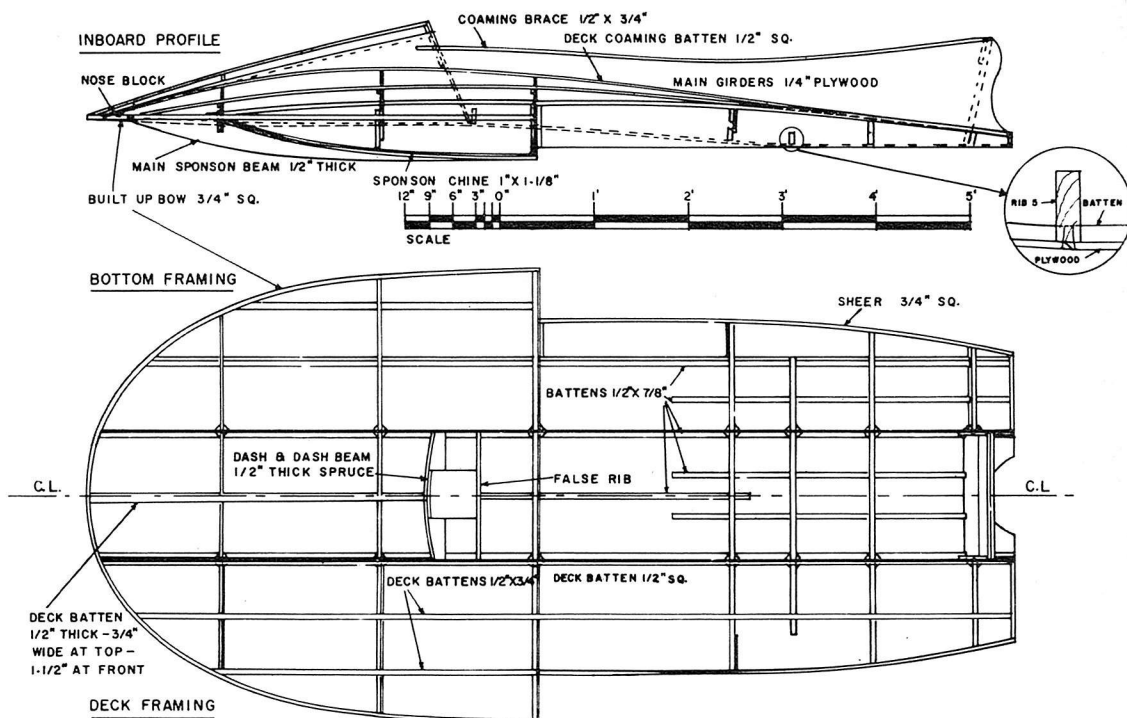
**OFF THE JIG** and set level to avoid building a twist in with battens and planking.

turn are fastened to the ribs with  $\frac{7}{8}$ -inch No. 8 screws. In this type of construction the girders, battens and bottom are fastened to each other to form a strong, light and structurally sound unit. Rib No. 7 is glued and screwed to the motor mount with  $1\frac{1}{4}$ -inch No. 8 screws. Check by eye and double check with a level to make sure that all the ribs line up. After the ribs are in place the rest of the battens are screwed to the ribs with  $1\frac{1}{4}$ -inch No. 8 screws. Leave the battens at the bow a bit longer so they may be trimmed off for the bow piece at the proper angle. The main sponson beams are next and run the length of the hydro. Using the batten as a guide,

mark off the proper angle on the beams. Rough cut the sponson and carefully cut the part behind the sponsons to size, with the proper angle of the non-trip. Do this accurately so that only a little fairing will be needed later.

Built-up bow is next. Bend one strip around the front and using this as a guide mark and cut the battens to their proper angle. All three strips are coated with glue on both sides, except the outside strip. They are grouped together while the glue is still wet, bent and screwed in place at the battens and ribs. The bow is clamped together every few inches with "C" clamps until dry. The upper chine behind the



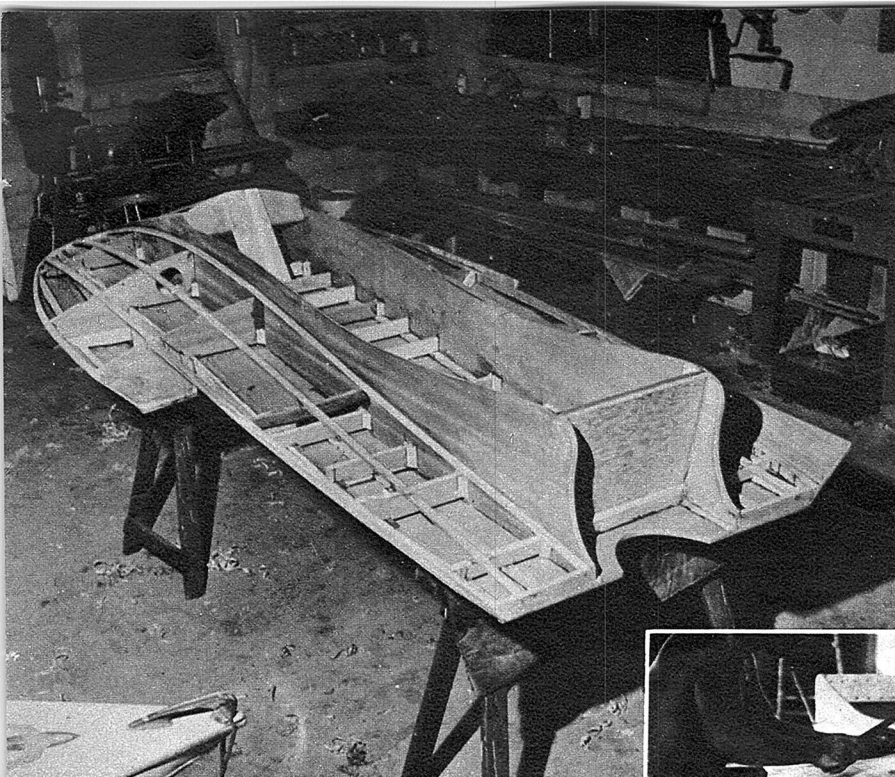


spoon is next. Rough cut to the proper angle and then glue and screw with 1 1/4-inch No. 8 screws to the ribs.

Sponson chine is next, and running from Rib No. 3 to bow, this is made up of two 1/2-inch by 1 1/8-inch pieces of spruce, bent and laminated together as a unit.

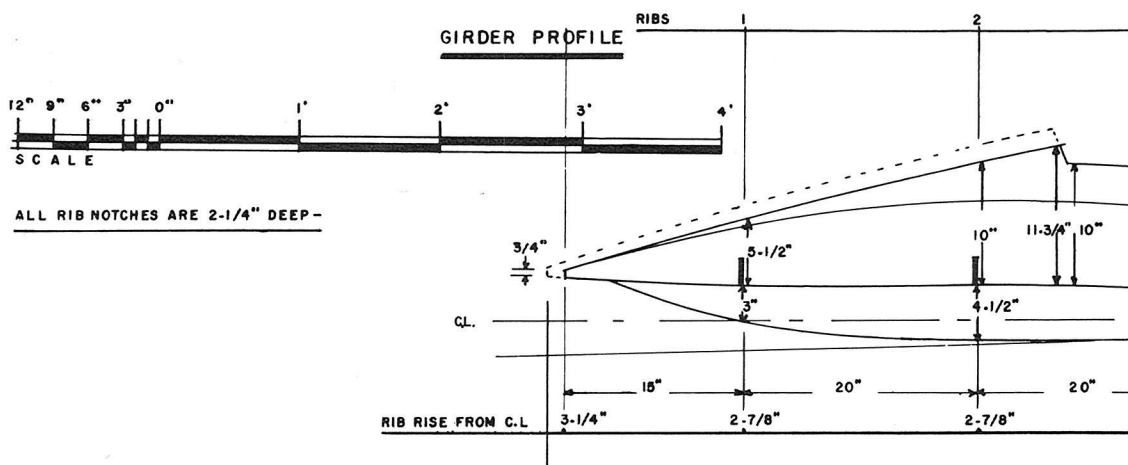
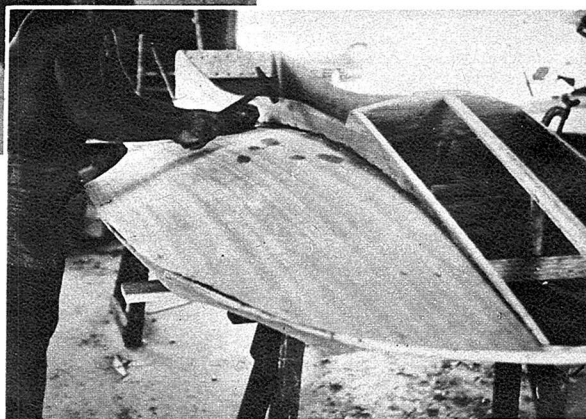
**Fairing:** Taking your measurements off the scale drawing of the main girders, mark off the shape of the sponson beam from Rib No. 3 to bow. Carefully fair the sponson and bow. Much careful fairing will be needed on the non-trips behind the sponsons. Keep this straight with no hooks or rockers in the non-trip. The angle of this non-trip will become steeper toward the transom. This takes more patience than skill and needs careful fairing so that the plywood planking will seat on all bearings evenly. Frequent checking with a straight-edge will be a big help. On any curved surface, be sure that the curve is smooth. Check the bottom with a 34-inch long straightedge across the width of the bottom; the straightedge should rest on all battens. The last 30 inches of the bottom should be flat in all directions.

The plywood non-trip chines are fitted next, and run from Rib No. 3 to transom and are fastened with glue and 3/4-inch No. 16 Anchorfast nails. This piece of plywood must be carefully faired at the built-in air-trap, and again the last 30 inches of the bottom is checked for flatness. Now the back of the bottom is glued and fastened to all battens, Rib No. 5 and the transom with glue and 3/4-inch No. 16 Anchorfast nails about 2 inches apart. At this point you need a partner to hold a heavy weight against the battens from underneath while you nail the bottom in place. I predrill all my nail holes in the plywood before nailing in place, and coat both the plywood and battens, etc., with Weldwood glue. Since I fiberglassed the last 4 feet I did not countersink the nails. The 1/4-inch plywood planking covering the bottom and sides of the sponsons is carefully fitted. Note the afterplane on the back of the sponsons; it runs from 1 1/2 inches on the outside edge to nothing on the inside. The bottom planking extends over the sides except where they butt. After the sides and bottom are carefully fitted, the planking is glued and nailed



READY for planking. Try to get deck battens to take smooth shape over ribs, above.

DECKING being glued and nailed in place. Soak in hot water to get compound shape.



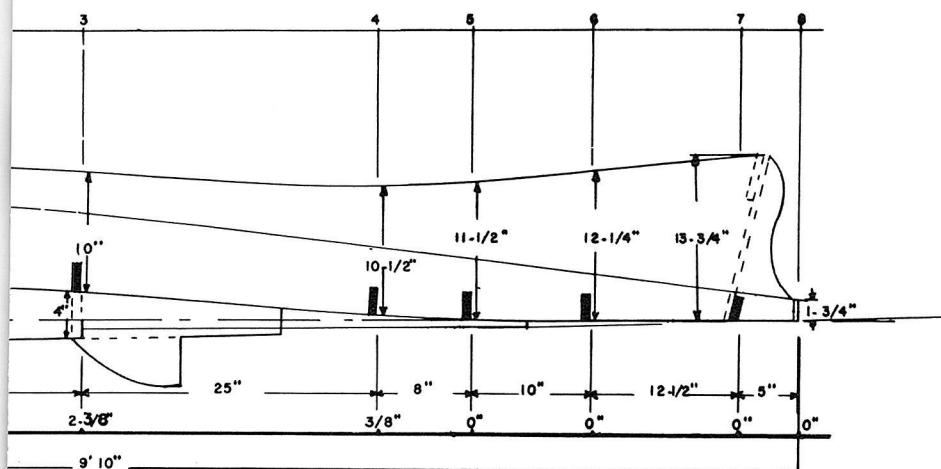
in place with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails. The rest of the bottom is carefully cut to fit between the sponsons, making a 45-degree cut to match the back section. This is carefully fitted and temporarily fastened in place. The bow shape is marked off on the bottom. Also mark off the battens, etc., so you will know just where to put the glue on the bottom. On the edge of the bottom between Ribs No. 3 and No. 4 trim off  $\frac{1}{8}$  inch to receive the aluminum airtraps. Predrill all nailholes, coat bottom and all the battens, etc., that come in contact with the bottom with glue. Get your small partner with the weight and nail the bottom in place.

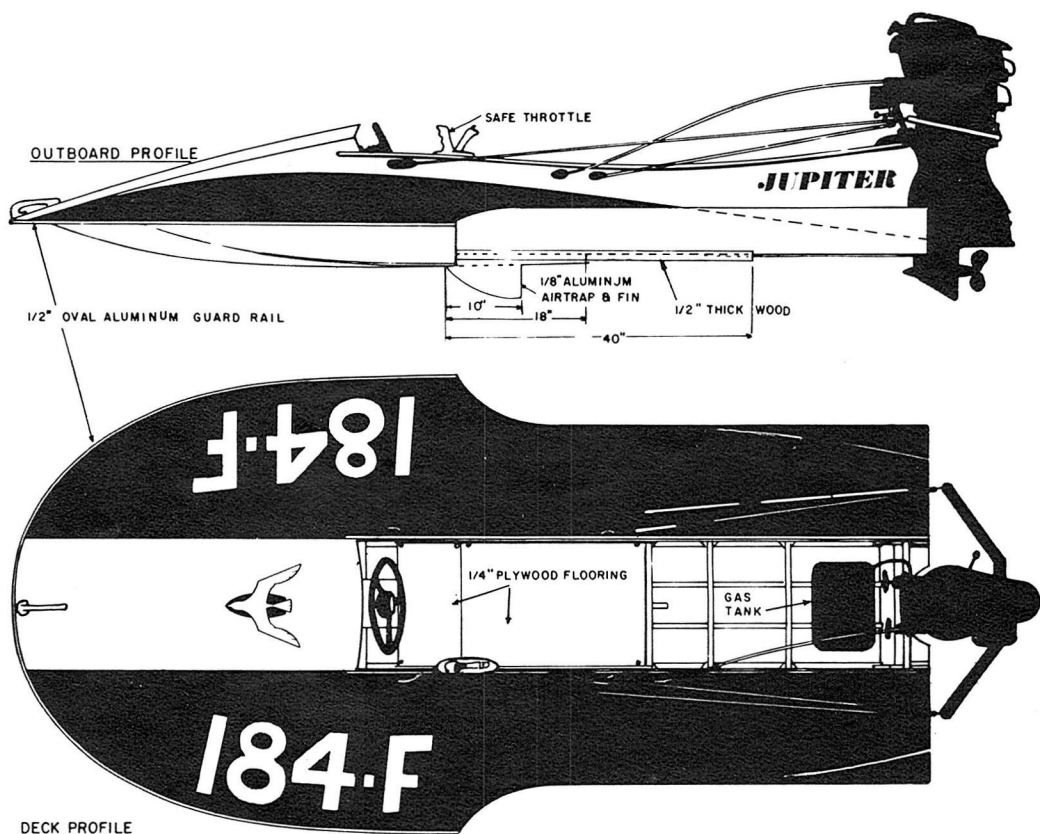
The sponson afterplane is beefed up with a piece of  $\frac{1}{4}$ -inch plywood glued to the afterplane. A few 2-in. "C" clamps will hold it in place until dry. The afterplane between the girders and behind Rib No. 7 is also "beefed" in the same manner. One-fourth-inch thick plywood is fastened likewise to the inside of the main girders and butted to the motor mount and Rib No. 7 to give more support.

Before removing the hull from the jig, carefully sand down and give the bottom two coats of varnish for now. I used a new Epoxy clear racing finish called "Tuff," sold by Glass Plastics Corp., 1605 West Elizabeth Ave., Linden, N. J. The stuff is very good as well as expensive. It will take about 3 quarts to do the bottom and decks. Place the hull right side up on level supports. Once again the hull is leveled and secured so it won't get out of shape.

The dashboard of  $\frac{1}{2}$ -inch spruce is now fastened to a "false" rib. The one front deck brace is next. Next all deck battens are fastened in place. The coaming is glued and nailed with  $\frac{5}{8}$ -inch No. 16 Anchorfast nails to the deck batten next to it. The rest of the deck battens are fastened with glue and  $\frac{7}{8}$ -inch No. 8 screws to all ribs and transom. The inside of the boat is given 3 coats of varnish.

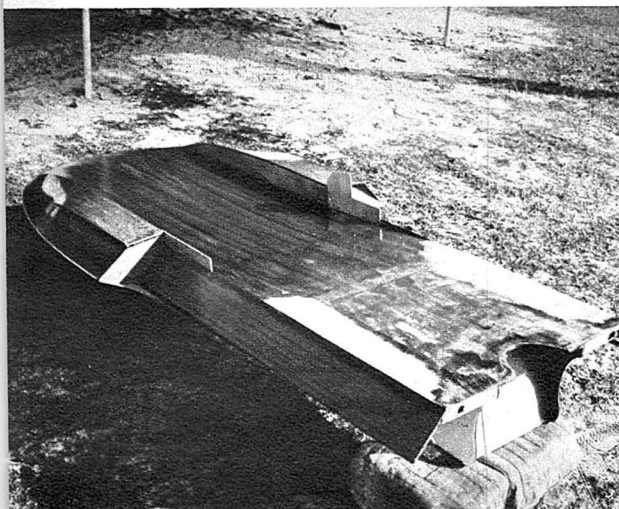
A large sheet of wrapping paper laid over the deck section and trimmed to size is a good guide for size and shape. Lay this over the plywood for the decking and cut a bit oversize. The plywood is carefully fitted and trimmed to size. Hot water applied to the plywood with a rag will make the decking more pliable and easier to fasten in place. Five-eighths-inch No. 16 Anchorfast nails are used to fasten on the  $\frac{1}{8}$ -inch decking. Coat both the battens and decking with glue. When nailing this decking in place, work from all directions as the plywood can be stretched a bit, but don't work from one direction. If you do, you will find yourself stuck with a large bulge of plywood that you will not be able to work in place. All nails should be on two-inch centers for plywood decking. The front deck of  $\frac{1}{8}$ -inch plywood is next and the procedure is the same as for the side decks. The coaming strip is of  $\frac{1}{2}$ -inch by  $\frac{3}{4}$ -inch spruce, and the coaming glued and nailed to this strip from the inside with  $\frac{3}{4}$ -inch No. 16 Anchorfast nails. The floorboard is  $\frac{1}{4}$ -inch plywood and is screwed to the battens on the outside edge; 4 screws are



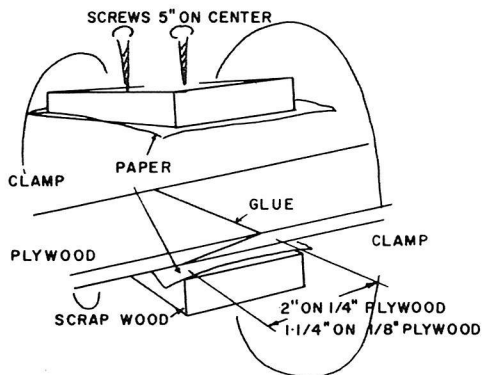


**FINISHED** bottom with airtraps in place. Half in. oval aluminum on outside edge.

**ENSOLITE** was used for padding. Cement to 1/4-in. plywood, then screw to the battens.







### BILL OF MATERIALS

#### BRONZE, MONEL, or EVERDUR FASTENINGS

- 1 gross of  $\frac{7}{8}$ " # 8 flathead wood screws
- $\frac{1}{2}$  gross of  $\frac{1}{2}$ " # 7 flathead wood screws
- 1 gross of  $1\frac{1}{4}$ " # 8 flathead wood screws
- 1 lb. of  $\frac{3}{4}$ " # 16 Anchorfast common nails . . 950 to lb.
- 1 lb. of  $\frac{5}{8}$ " # 16 Anchorfast common nails . . 1,400 to lb.

#### PAINT PRODUCTS

- 5 lbs. of Weldwood glue
- $\frac{1}{2}$  lb. of Wood Dough or similar surface filler
- $1\frac{1}{2}$  gal. of spar varnish
- $\frac{1}{2}$  pint of boar enamel (color to suit)

#### SITKA SPRUCE, or WHITE CEDAR

- 5 pieces— $\frac{1}{2}$ " x 10" x 12"
- 3 pieces— $\frac{3}{4}$ " x 10" x 12"

#### PLYWOOD MARINE GRADE

Decking; 2 sheets of  $\frac{1}{8}$ " thick 3 ply Mahogany 4' by 8' if you can get it in 4' by 10' then one sheet will do.

Bottom; non-trip chines; sponsons; main girders; floor board; etc. 3 sheets of  $\frac{1}{2}$ " thick Mahogany plywood 4' by 8'. Transom one piece of fir plywood  $\frac{1}{2}$ " x 16" x 14".

#### HARDWARE

- 1 Steering wheel
- 1 Piece of steering rope 24' long
- 1 Safety throttle
- 1 Bowden throttle cable 5' long
- 2 Rear snap pulleys, with snap swivel
- 2 steering rope anchor straps
- 2 Forward steering coaming pulleys
- 2 Aluminum stern handles
- 1 Aluminum bow handle
- 1 12' length of  $\frac{1}{2}$ " half round aluminum

enough. Ensolite is cemented (with contact cement) to the plywood flooring. Don't cover the screws so that you will be able to remove the floorboard for cleaning purposes.

The wooden part of the airtrap is a piece of  $\frac{1}{2}$ -inch thick spruce 38 inches long (see rib drawing No. 4 for size and shape). This is fastened in place with glue and finishing nails. The aluminum part of the airtrap is about 15 inches long and slips into the groove between the edge of the bottom and built-in airtrap. This is screwed to both the built-in and wooden part of the airtrap, with  $\frac{1}{2}$ -inch No. 7 screws and to Rib No. 3 with  $\frac{7}{8}$ -inch No. 8 screws. Take aluminum airtrap measurements off the girder drawing, with scale. Please note that fin is built in on the left airtrap for left-hand racing; for right-hand racing put fin on right side. The hardware is next. The placement of the throttle and the height of the steering wheel should suit the driver. Note that the left-hand pulley is about 2 inches nearer the transom than the right. To get your racing number join the American Power Boat Association, 2534 St. Aubin, Detroit 7, Mich.

Motor angle and height are very important for racing and a motor  $\frac{1}{8}$  inch too high or low has lost many a race. The transom height should be 14 inches for the Merc 20-H or the Hot Rod. You will have to chuck the motor up to maybe  $14\frac{3}{4}$  inches high, depending on the prop and the type of water you are running on. This 14-inch transom will also be a good starting point for the Konig or Anzani. For a motor without a racing lower unit the transom should be  $17\frac{1}{2}$  inches high. A marine speedometer is a "must" to tell you if there is any improvement in speed from one adjustment to another. Make one change at a time. For gosh sake always have a safety throttle, one that will close the butterfly of the motor in case you are thrown out. I always run with a "full" butterfly. In case of a flip it's much safer for you and the other drivers, and will save you from a "blown" motor. •

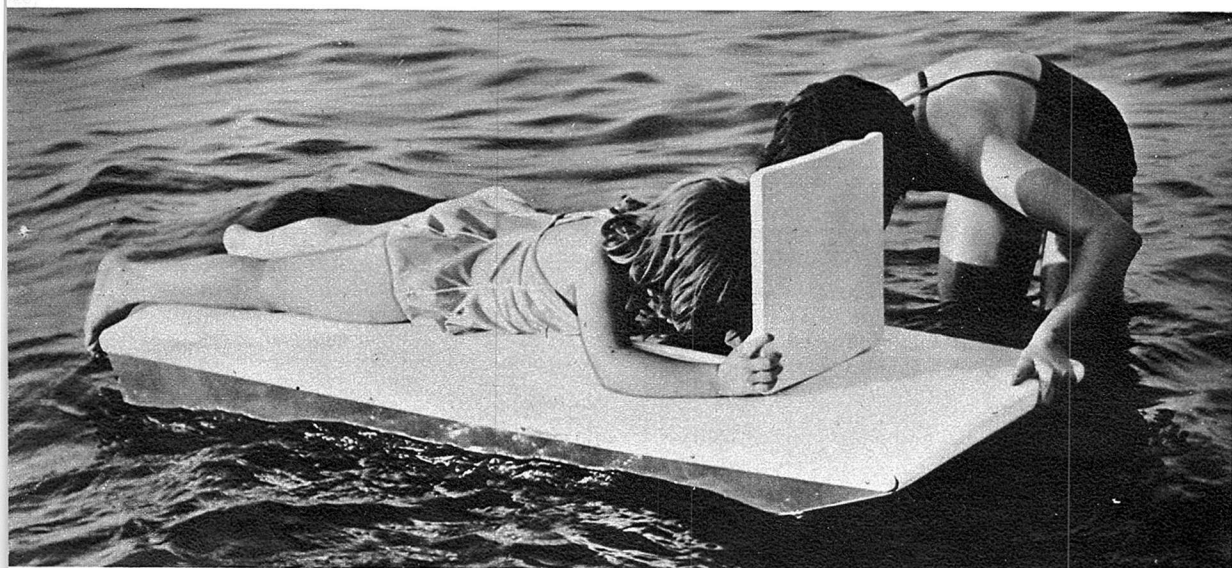
### LARGE SCALE PLANS

with full-size rib drawings (plus 6 colorful decals) are available for building this boat. They are \$12 post paid. Order from Hal Kelly's Plans, P.O. Box 2095, Fort Pierce, Florida. Specify Plan FB-Jupiter.

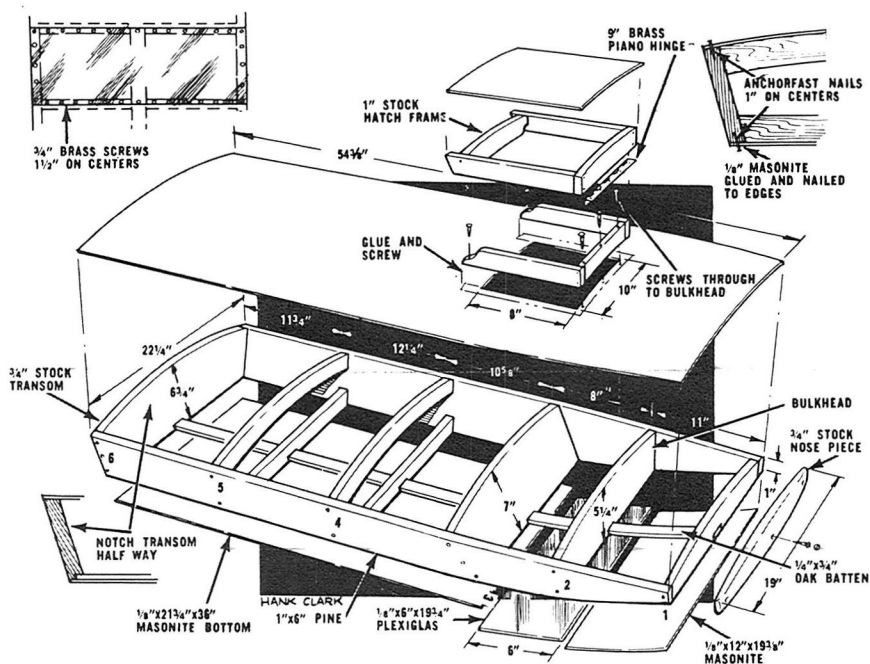
# How To BUILD 20 BOATS

## PEEPER

Paddle boat for kids has glass-bottom viewer.



WIDE PLEXIGLAS STRIP on bottom gives clear view of underwater marvels through viewer.



**J**UNIOR frogmen (and girl tadpoles, too) will have a splashing good time cavorting on this paddle boat with its Plexiglas window for underwater observations . . . and it can be built in an evening.

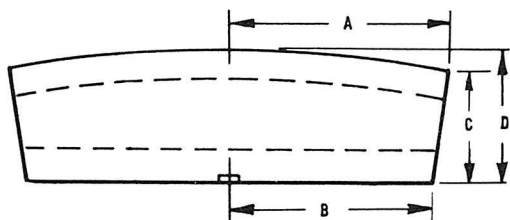
Start by marking off the 1x6 pine stock as shown in the drawing. Lay out the bulkheads and frame members, then saw all pieces to size as shown in the drawing. Next, glue and screw the side panels to the cross frames. Install the  $\frac{1}{4} \times \frac{3}{4}$ -inch oak center batten as shown, notching it through each frame and half-through the transom. Plane the edges of frames and side pieces to insure a snug fit for the Plexiglas and the top and bottom Tempered Masonite panels.

Fix the window to the bottom of the hatch well with  $\frac{3}{4}$ -inch brass wood screws

on  $1\frac{1}{2}$ -inch centers. Drill and countersink the Plexiglas before bedding it in an even layer of waterproof glue, then secure it with wood screws. The deck and bottom panels are similarly glued but are nailed with Anchorfast boat nails. When the glue dries, plane edges flush with sides.

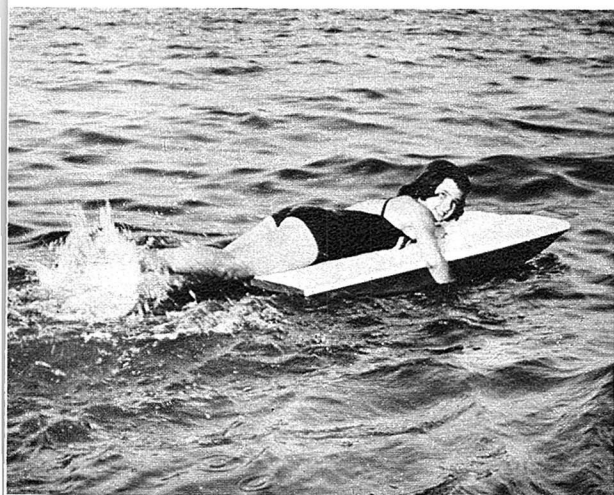
Saw out the hatch opening above the Plexiglas and glue and screw the hatch combings in place. The hatch cover is  $\frac{1}{8}$ -inch Tempered Masonite over a  $\frac{3}{4}$ -inch pipe frame; attach it along the forward edge with a brass piano hinge. Secure the nose block in place with screws and shape it to the contours of the boat. Fill screw holes with plastic wood and sand smooth. Fasten the half-round gunwales in place, then apply a good undercoating to the boat followed by a finish coat of marine paint. •

**FRAME SIZES** can be accurately figured by checking drawing (below) with chart.

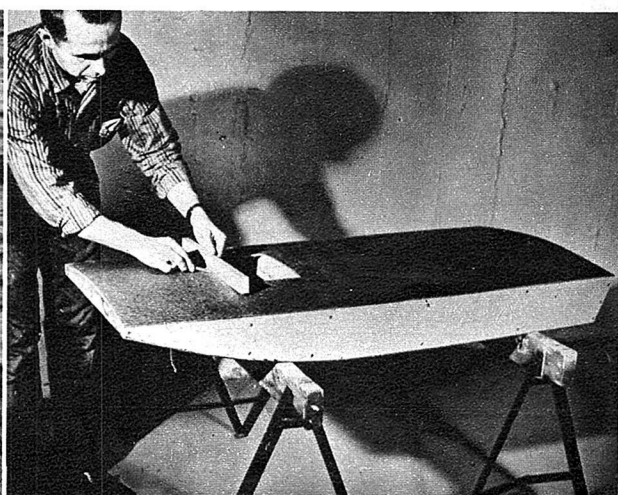


STATION NO.	DIMENSIONS IN INCHES			
	A	B	C	D*
1	9½	9¾	1½	1¾
2	10¾	9-11/16	4½	5¼
3	10¾	9¾	5¾	7
4	11-1/16	10-13/16	1½	2
5	11½	11	1-1/16	2
6	11½	10-3/16	5¾	6¾

\*OVER-ALL DIMENSION; USE TO SELECT BOARD WIDTH.



**LIGHTWEIGHT** and bouyant, Peeper can be paddled with hands and feet as shown here.



**MASONITE** panels bend easily to form deck. Here hatch frame is marked for curved cut.

# How To BUILD 20 BOATS

## FROSTFISH

By Cal Smith

For top speed thrills on ice build this 16½ footer.

**I**F you've never experienced the sensation of flashing over the ice at 40 mph, you're really missing a thrill. Building Frostfish will put you into this exhilarating winter sport and you can do it for \$100—less if you already own a sailing paddleboard, dinghy or canoe.

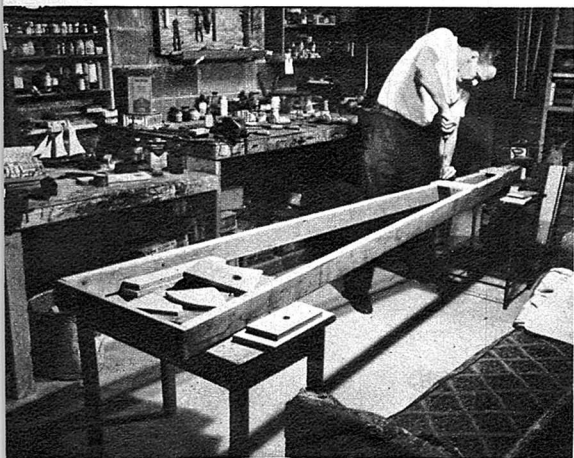
Frostfish was designed to be quickly and easily built. Ordinary lumber and construction grade steel are used throughout and hardware store fittings are specified rather than more expensive marine hardware. The sail and spars are adapted from the Alcott Sailfish but lateen or Gunter canoe rigs and dinghy spars and sails of 40 to 65 square feet can be used.

Completely portable, Frostfish can be taken apart or assembled in a few minutes. The body weighs 65 lbs., the runner plank is 40 lbs. and the rig is 15 lbs.—any of which can be handled by one adult. The total 120-lb. weight is easily carried on top of a car or station wagon.

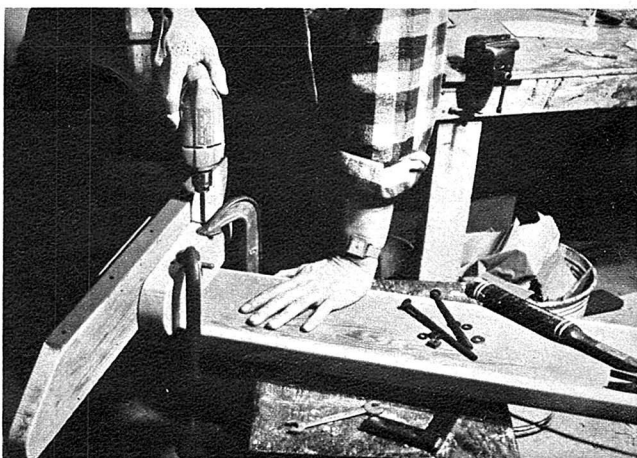
This is a fun craft, easy to sail and highly maneuverable. Carrying one adult or two youngsters, she'll do 35 to 40 mph in 20 to 25 mph winds. And she's safe. With the low lateen rig, she stays down on the ice where she belongs.

Construction is reduced to the barest essentials. The body is built of 2x4's joined in an acute isosceles triangle with plywood and 1x4 crosspieces. The runner plank is a 2x8 and the runners are built of steel angle, 2x4 fir or pine and 1x4 oak. Careful selection at the lumberyard will enable you to find good clear fir or pine. Although fancy woodworking isn't involved, a circular saw and a jig or band saw will speed up building. A drill press should be used for drilling the metal parts.

Begin with the body. The sides are at a 5° angle with the centerline, so power tools can be preset at this angle. After beveling the ends, lay the sides on sawhorses and nail a piece of scrap 1x2 across

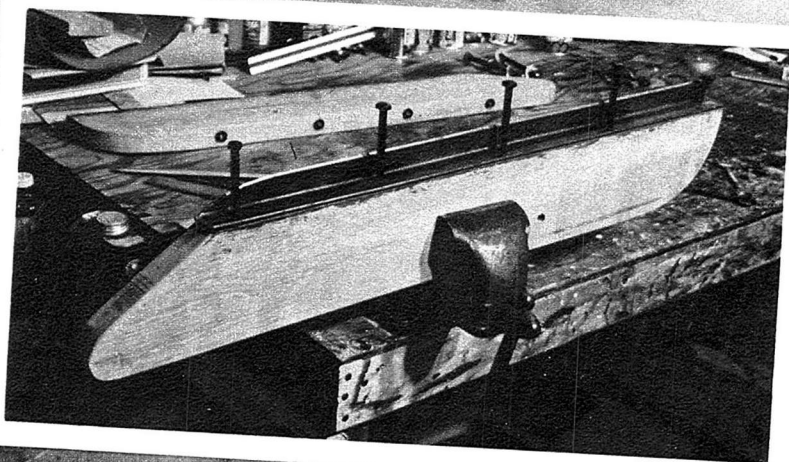


**BODY SIDES** are 2x4's joined in a triangle shape with plywood and a 1x4 crosspiece.

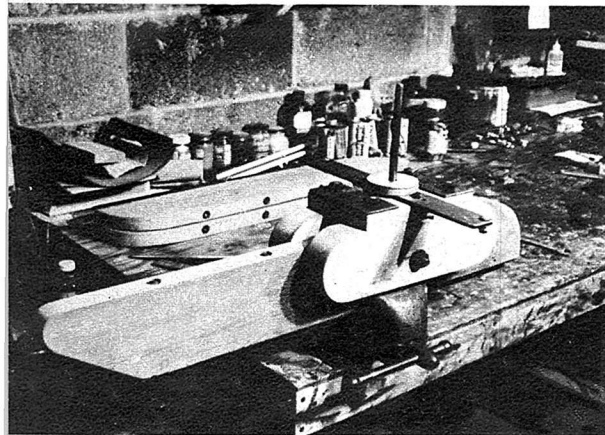


**RUNNER CHOCKS** are carefully aligned and clamped for boring holes in runner.

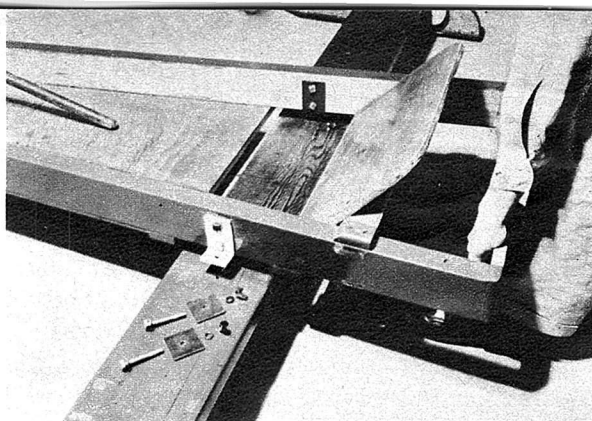




**RUNNERS** are made from  $\frac{1}{2} \times 1$ -in. steel angle, then bolted completely through  $\frac{5}{8}$ -in. oak. Large scale plans show details of different types.



**STEERING RUNNER.** Steel straps serve as bearing plates for bolts used in assembly.



**LOWERING** the body of the ice boat onto the runner plank. Bolts go through angles.



**STEPPING THE MAST.** Each stay connects to eyebolt, one forward and two on runner plank.

the front end to join them temporarily. Then glue and screw the 1x4 crosspiece in place at the rear end. Next cut out the half-inch plywood crosspieces for the front section and screw the bottom ones in place. The bottom piece of the  $\frac{3}{4}$ -inch plywood mast step is then bored with a  $\frac{3}{4}$ -inch dia. hole for the steering post and fastened in place. The half-inch plywood floor is put

on later since it must be fitted to meet the runner plank cleat.

Now turn the body over and install the plywood and 1x4 crosspieces. Before screwing down the front piece, put an eyebolt in place for the forestay. Then cut the lower mast step of  $\frac{3}{4}$ -inch plywood to fit the foot of the mast. This piece should fit snugly inside the 2x4's behind 1x4 cross-

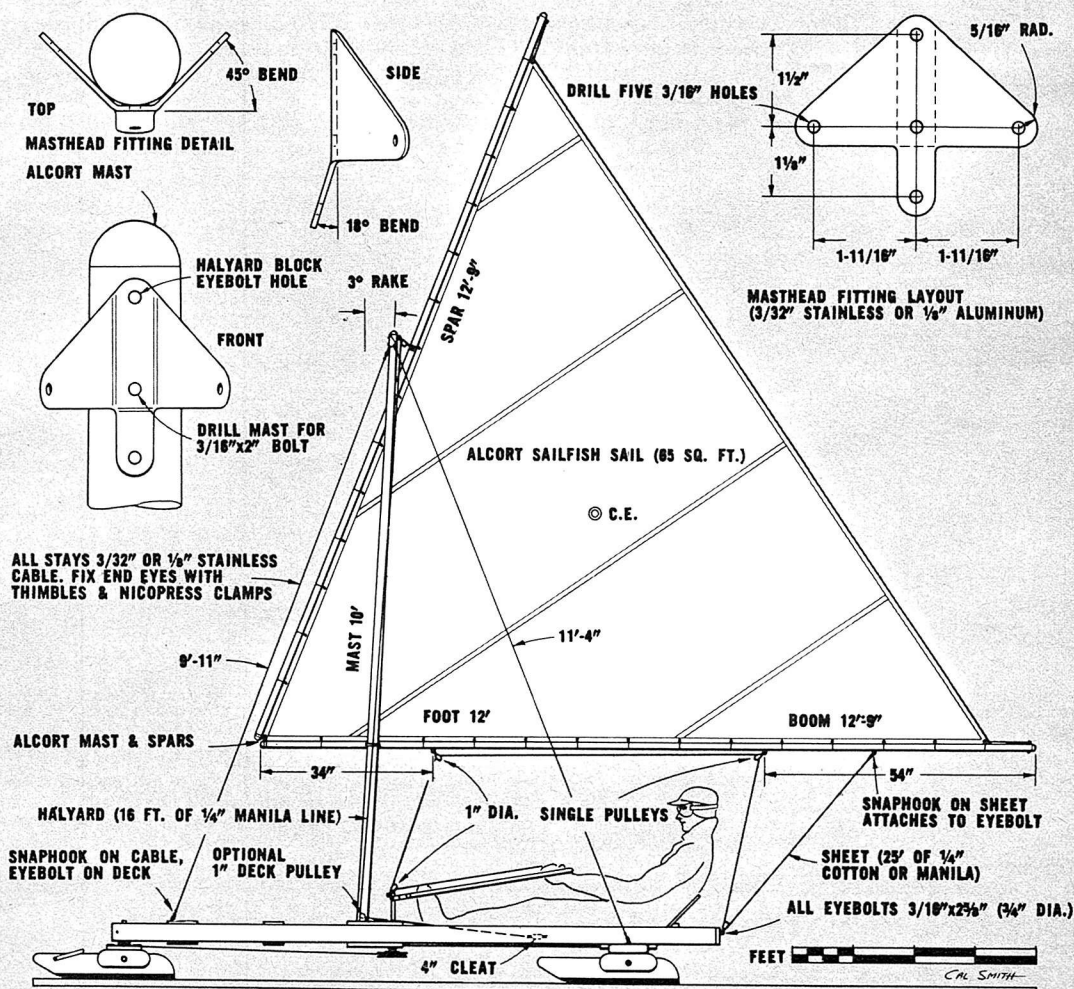
piece and should be glued and screwed to the bottom  $\frac{3}{4}$ -inch plywood panel. The  $2\frac{1}{4}$ -inch mast step hole should be located a quarter-inch forward of the hole in the top panel to give a  $3^\circ$  rake to the mast. Bore the top mast step panel for the mast and steering post and screw it in place, shifting it to align the mast and post accurately.

With the crosspieces in place, the body is turned bottom up to mark the position of the runner plank. Carefully align the plank so that it will be at right angles to the centerline. The best way to do this is to measure the diagonal from the ends of the runner plank to the front of the body. The diagonal dimensions must be equal. When the plank alignment is set, attach 1x2 cleats across the bottom of the body fore and aft

of the runner plank, fitting them snugly against the runner plank edges. The half-inch plywood floor can now be screwed and glued to the bottoms of the 2x4's.

Turn the body over again to add the seat back. Bevel the edge of a 1x2 at  $45^\circ$  to form the seat back cleat. Screw it in place and then attach the other cleats below. This completes the woodwork on the body. Go over the whole structure with sandpaper, rounding off all edges.

The runner plank can be tackled next. If you wish to go to the extra trouble, you can make up a laminated, arched runner plank that will make the boat ride easier on rough ice. Use two layers of 1x8-in. boat grade spruce, glued while clamped in the arched position. Set up two sawhorses under each end of the plank with a scrap





The runner chocks are made next. The steering runner chocks are one half inch shorter than the others. Clamp each pair together and drill for the runner pivot bolt on a drill press. Holes for  $\frac{5}{16}$ -in. attachment bolts should also be drilled on drill press. It is most important that the runner chocks be bolted to the runner plank

The steering chock should be made next. Cut a groove for plate B in the chock tops. This plate serves as a bearing surface for the upright pivot (king) bolt. The large-scale plans contain detailed drawing of fittings such as plates B and C. Most of these fittings are cut from 1/8x2-inch hot rolled steel strap. This is ordinary building construction material and should be readily available. Other metal required is also hot rolled steel of common sizes. Some hardware stores or builder's supply houses carry Redi-Rods in required sizes. One important point to remember is to give the underside of metal fittings a thick coat of paint to prevent rusting before attaching







steers the boat to the right. This is the traditional arrangement and should be followed if you expect to sail against other ice boats. Simply lead the cables directly back around the drum without crossing them. If you do not wish to build a drum and cable steering gear, you can bolt a duplicate of the front steering arm to the flange on the steering post and connect the ends with auto-type tie rods. The steering cable or rods should be provided with a tightening device. Any slippage of the cable around the drum can be reduced by taking up on a turnbuckle.

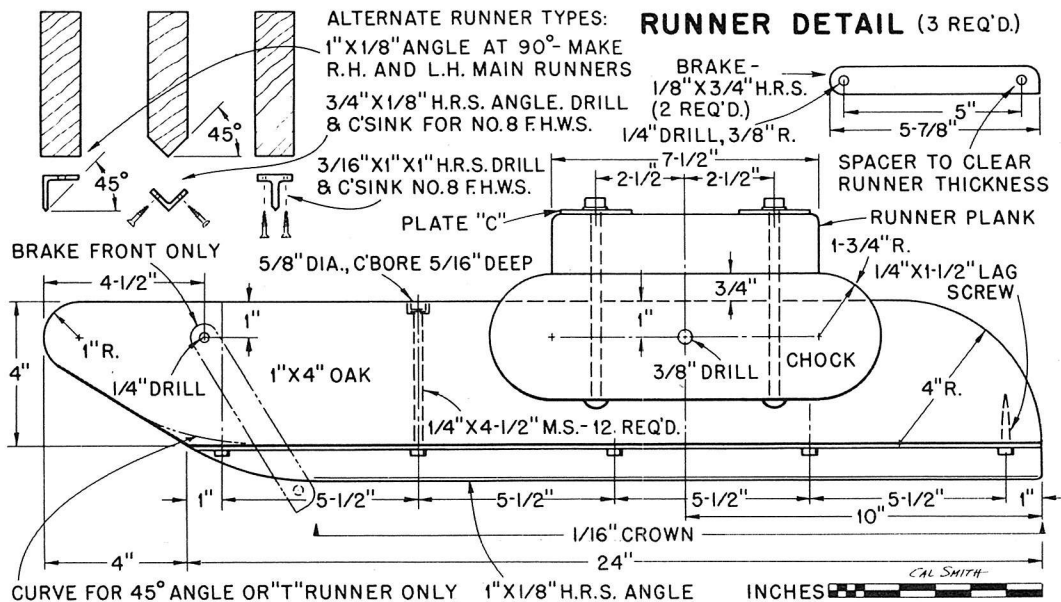
Now for the go-power. We picked the lateen rig because of its simplicity and low cost. Although the Alcott Sailfish rig is not strictly an ice boat sail, it pushes Frostfish along at a good clip. It will not stand up in 40-50 mph gusts because it is not as rugged as regular ice boat sails, so exercise some caution in strong winter winds. Other

sails and rigs of similar area can also be used on Frostfish. Old Town makes lateen canoe rigs of 40, 45, 55 and 65 square feet area and Grumman can supply a lateen rig of 45 square feet and a Gunter rig of 65 square feet. Dinghy sails and spars could also be adapted. Whichever rig you use, be sure to locate it correctly on the boat. Take the trouble to work out the center of effort for your particular sail as shown in the drawing in the large-scale plans. This will insure good balance and trim.

You'll like Frostfish. We've certainly enjoyed the original. There's nothing quite like zipping over the ice, and when a good gust hits you—wow! That acceleration really racks you back in the seat. If you can get your friends interested, build two or three boats and enjoy some racing. Competition adds even more zest and you'll find yourself glad to be out when a winter wind is blowing. •

**FROSTFISH** is quickly set up once you reach the lake, and she will give many speed thrills.



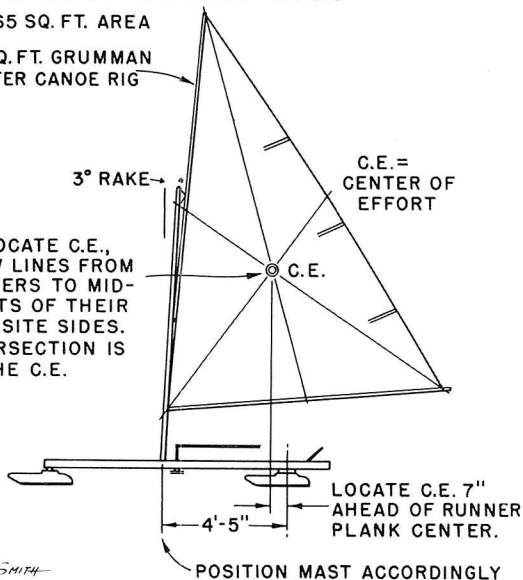


## ADAPTING OTHER RIGS

40-65 SQ. FT. AREA

65 SQ. FT. GRUMMAN GUNTER CANOE RIG

TO LOCATE C.E., DRAW LINES FROM CORNERS TO MID-POINTS OF THEIR OPPOSITE SIDES. INTERSECTION IS THE C.E.



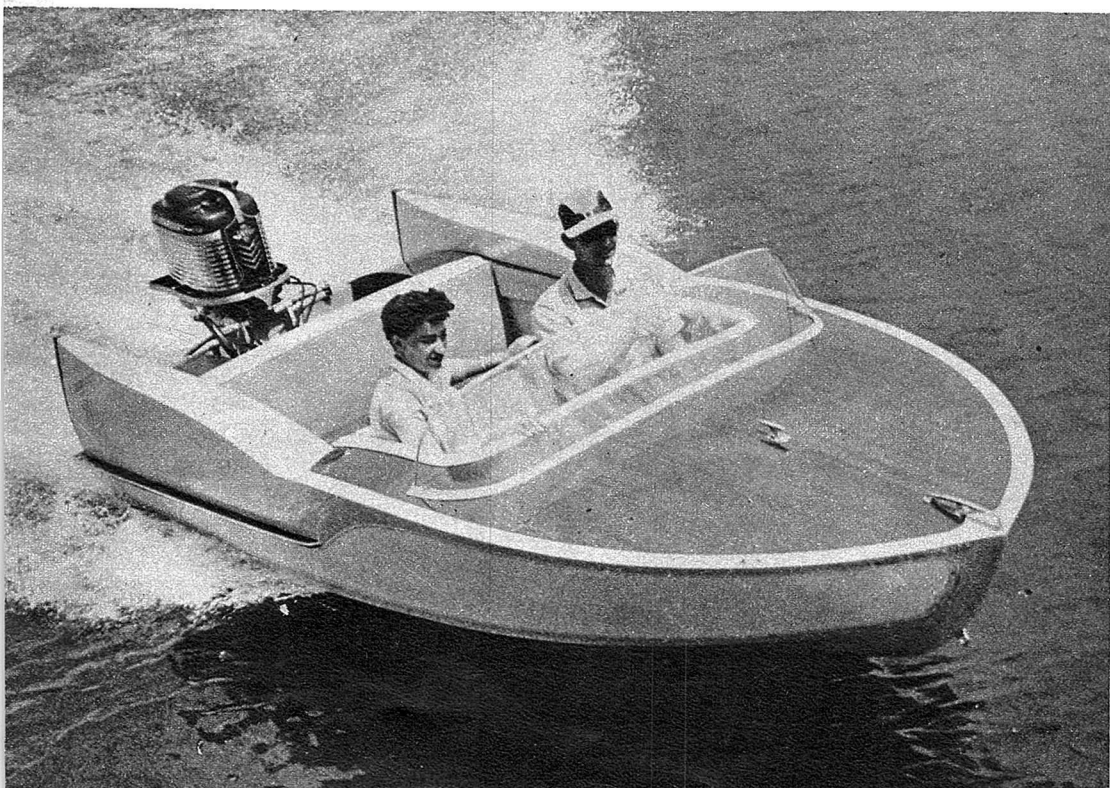


# How To BUILD 20 BOATS

## L. DORADO

By Glen L. Witt, N.A.

Popular 13-footer combines class with speed.



**MAXIMUM** practical power for the L. Dorado is 40 hp., but does well with smaller units.

**H**ERE IS ONE OF THE most advanced, modern boats available to the builder. The L. Dorado's overall length of 13 feet, with an extremely wide beam of 68 inches, provides safe, proven performance. The flowing tails not only set a styling standard but also prove functional in keeping the motor and the aft passengers free from spray. The split back front seat allows quick and easy access between the cockpits.

The L. Dorado is intended for motors to 40 horsepower. If the builder anticipates using more power, a 15-foot model (in

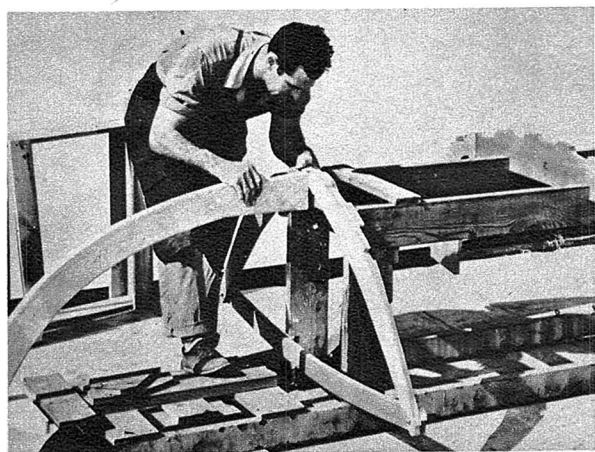
plans) is available for the larger motors.

Because of the unusual design of the L. Dorado, it is suggested that the builder carefully follow the sequence of the photographs and instructions, even though he has had previous building experience.

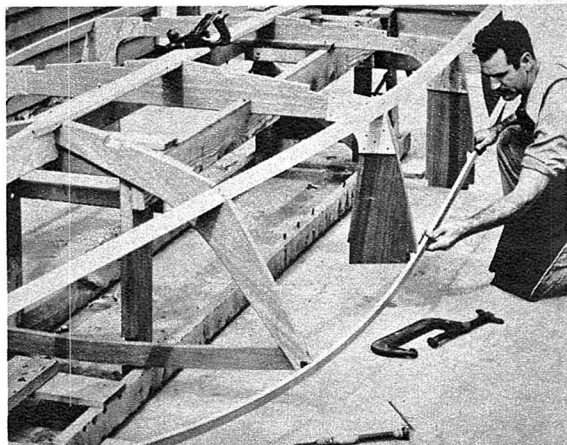
### GENERAL SPECIFICATIONS

All framing and longitudinal lumber may be white oak, Philippine mahogany or Sitka spruce. All plywood used should be edge stamped DFPA. The planking should be full marine grade, while floorboards, gussets, etc. may be standard ex-

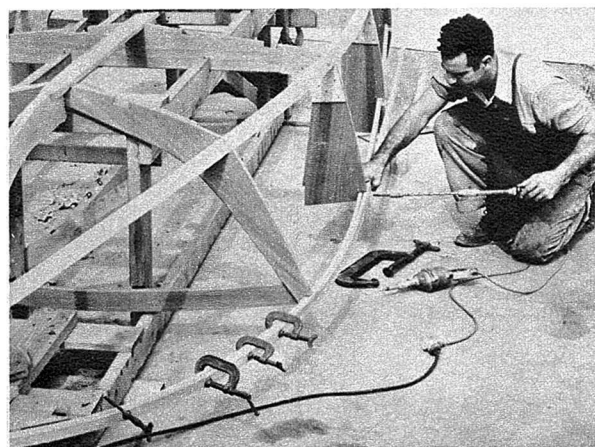




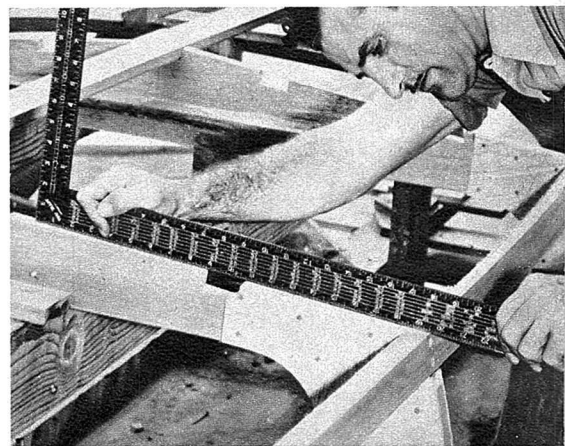
**FRAMES** are mounted on a box-like building form, leveled fore, aft and across.



**SPRINGING** initial sheer clamp in place. For ease in bending, two pieces are used.



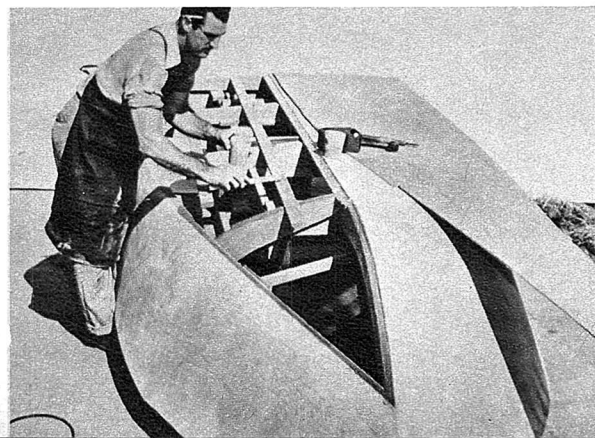
**SECOND LAMINATION** of the sheer is glued and screwed through both into the frames.

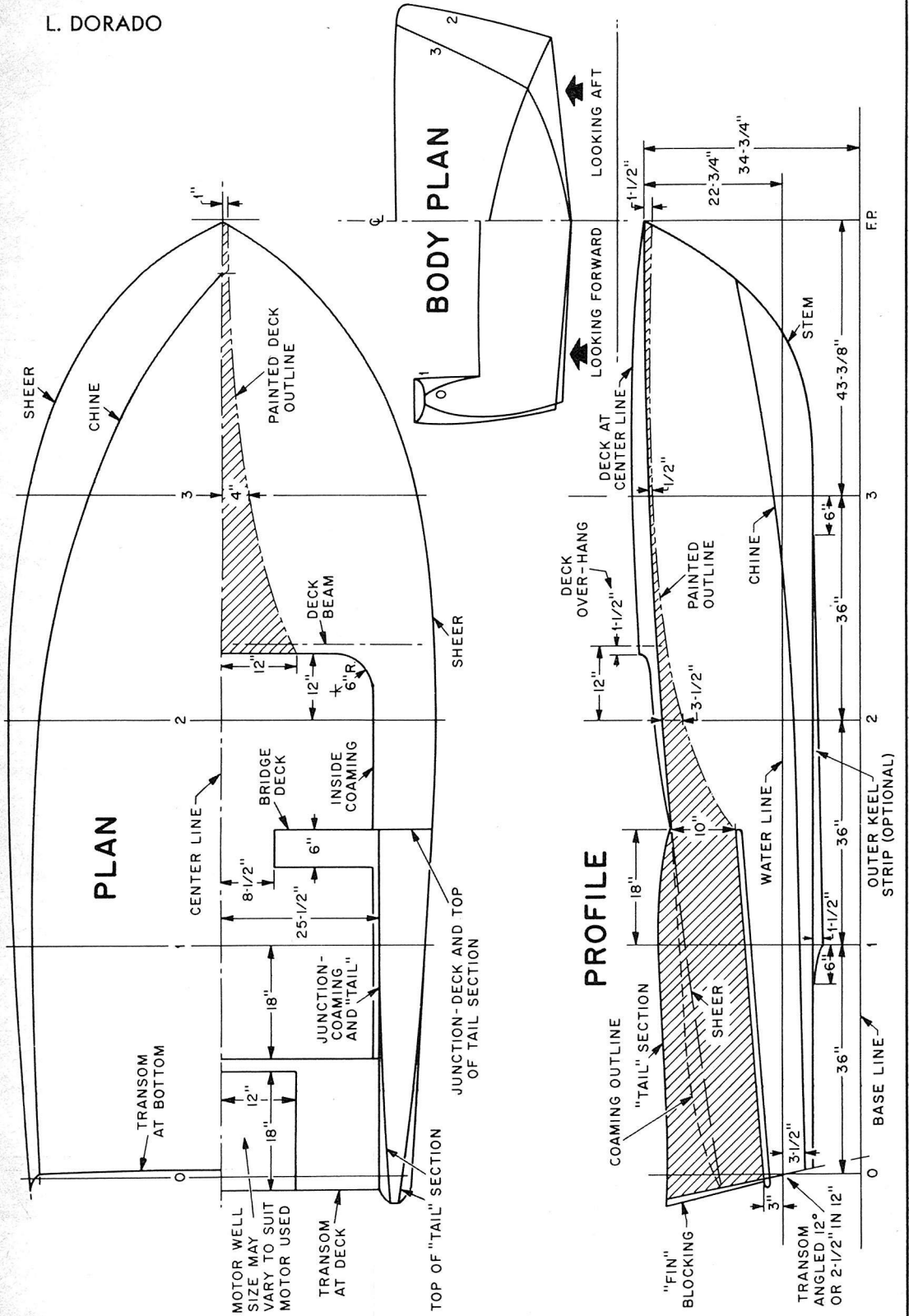


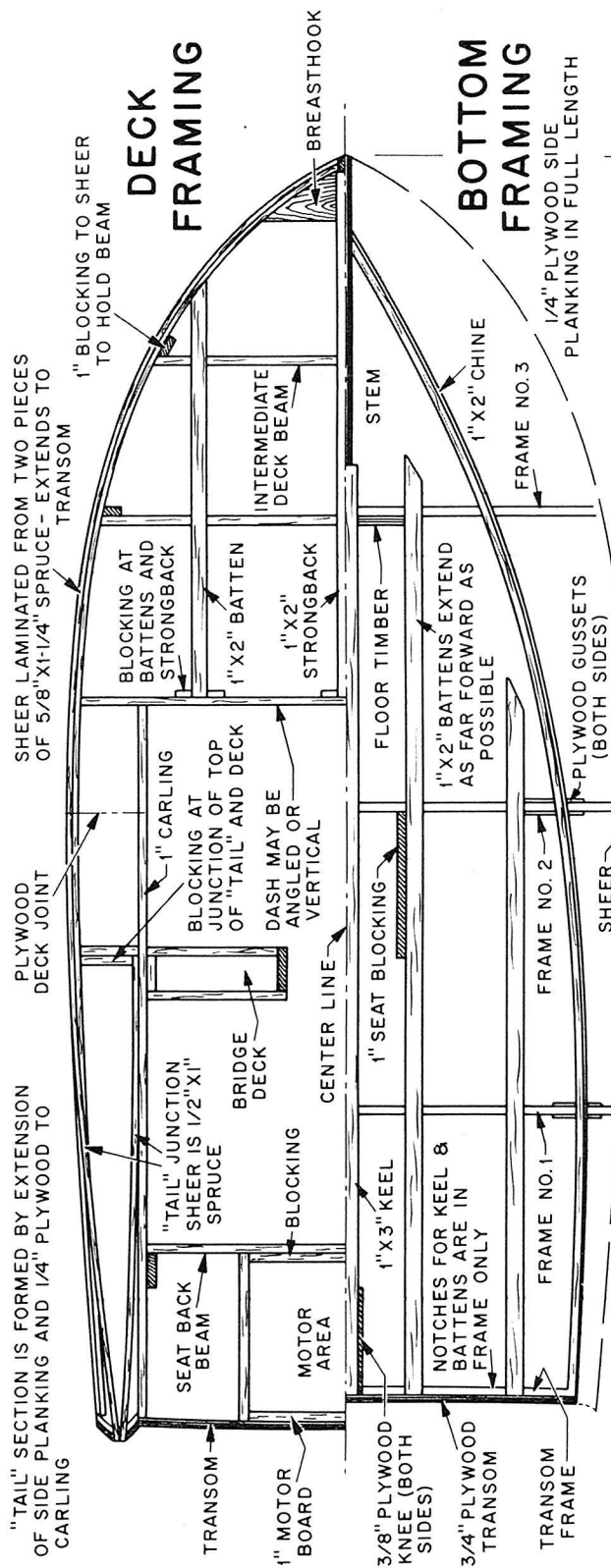
**SQUARE** is used for faring frame. All surfaces must be beveled to receive skin.

**MEMBERS** of framework being coated with glue. Mastic optional at the water joints.

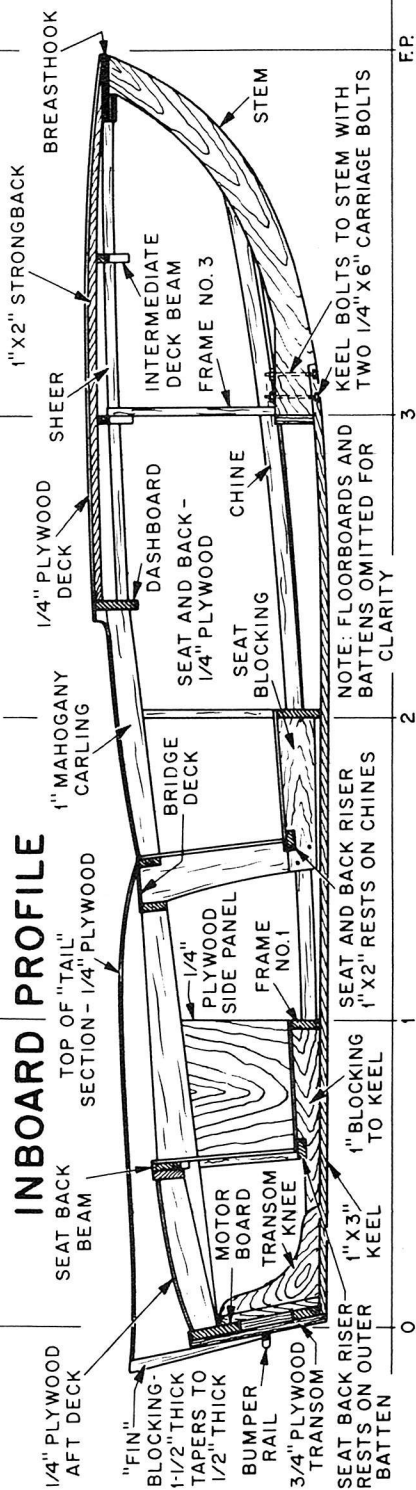
**AFTER FITTING** bottom planking to sides, screw into chine. Wet burlap aids bending.

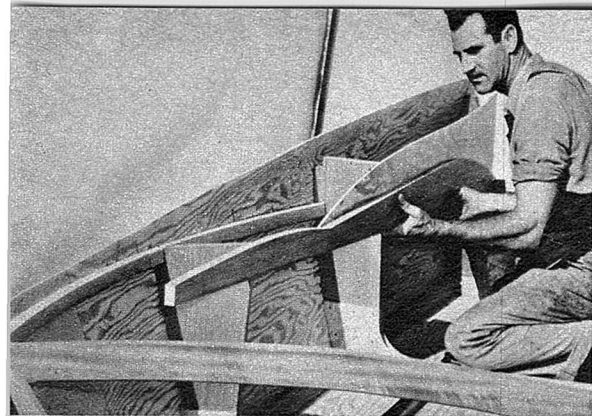






## INBOARD PROFILE





**FITTING** carling and tail section into place. Fit carefully for extra strength.

terior grade. All fastenings should be bronze or hot dipped galvanized. Brass is not advised, except in nonstress areas, due to the tendency to fracture under strain. If you have trouble locating the proper sized fastenings "Glen L" can furnish kits that include all of the required screws and nails. All surfaces should be glued with resorcinol or urea-resin glue. Nails are to be the Anchorfast or the annular thread type. The frames are fabricated from 1-inch material. At the junction, use at least five 1-inch nails in each leg. Frames No. 1 and No. 2 are formed by a bottom member in single width, while frame No. 3 incorporates the bottom and side member in one part, held together with a floor timber.

## BUILDING INSTRUCTIONS

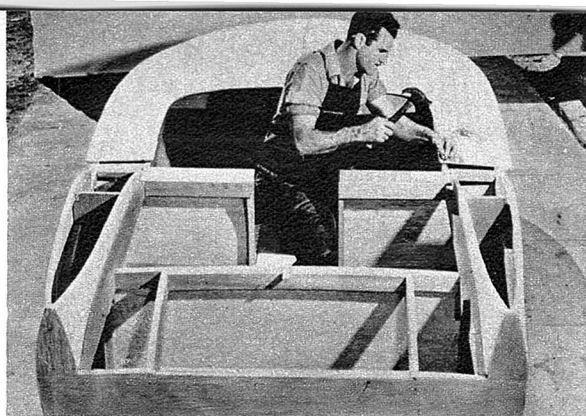
**TRANSOM:** The transom is cut from  $\frac{3}{4}$ -inch plywood to the given shape. The entire transom is framed in 1-inch material. Notches are cut from the framework, but not into the transom plywood. Screw the framework to the transom with  $1\frac{1}{2}$ -inch No. 8 screws, spaced 6 inches apart.

**STEM:** Stem, breasthook and transom knee are all fabricated from two layers of  $\frac{3}{4}$ -inch plywood to the shape shown. The breasthook is so designed as to lock notch around the stem and rest on top.

**SETTING UP:** The bottom is built bottom side up on the indicated building form. With the longitudinal setup members being level athwartships and lengthwise, the frames are carefully aligned with a level to be completely vertical and on their centerline. The stem and breasthook assembly is screwed to the No. 3 frame and blocked to its proper position.

**KEEL:** The 1x3-inch keel is bolted to the stem with  $\frac{1}{4}$ -inch carriage bolts and screwed to each frame and transom with 2-inch No. 10 screws.

**BATTENS:** The 1x2-inch battens are



**DECKING** is scribed in place and nailed down. Interior is completed before decking.

located per the notches indicated in each of the frames and transom and fastened with 2-inch No. 10 screws.

**CHINE:** The chine is notched into the frames and tapered to fit against the stem. This 1x2-inch member is fastened to each mating point with 2-inch No. 10 screws.

**SHEER:** The sheer is built up from two laminations of  $\frac{5}{8}$ x $1\frac{1}{4}$ -inch spruce. One lamination is put on at a time to simplify the bending.

**FAIRING:** The hull framework must be faired or beveled so that the planking will mate to all surfaces. Take care in the fairing. Be sure the lines are clean, even sweeps. To assure a proper performing boat the longitudinal lines in the aft portion of the boat must be straight lines.

**PLANKING SIDE:** The sides are planked with  $\frac{1}{4}$ -inch plywood in full length panels. If shorter panels are desired, they should be joined as shown in the drawings. A panel is leaned against the side of the boat and roughly scribed to shape. After fitting, the panel is fastened with 1-inch No. 8 screws, to the chine, transom and stem spaced about 3 inches apart.

**BOTTOM PLANKING:** The bottom planking is either  $\frac{1}{4}$ -inch or  $\frac{3}{8}$ -inch plywood. The  $\frac{3}{8}$ -inch will only be required if the hull will be used exceptionally roughly. Fit the panel in place carefully along the portion that will butt join with the side planking. Other areas may be left long or trimmed after the planking is fastened in place.

**OUTER KEEL:** The outer keel or aluminum fin is optional, as shown in the drawings.

**SPRAY RAIL:** An optional but desirable feature is a spray rail that covers the joint of the side and bottom planking. The hull is then removed from the form and turned right side up. Par for this operation is usually half a day, while neighbors and friends make comments and the builder



## PLAN SET AND FULL SIZE PATTERNS

are available for building this boat at a cost of \$16.25. FRAME KITS which include the above are \$88.00 (plus shipping costs). Send all orders to Glen L. Marine Designs, 9152 N. Rosecrans, Bellflower, California. Specify Plan FB-L. DORADO in plans or kit.

takes pride in showing the shape of the hull to this point.

**CARLING:** The carling is cut to shape from the pattern given. It is fastened in place along the inside of the frame side members. The inner tail covering, 1/4-inch plywood, is preassembled to this member.

**TAIL SHEER:** The tail sheer clamps are cut from 1-inch spruce to a width of 1 inch. These members extend from the carling and sheer to the transom.

**DECK FRAMEWORK:** The dashboard beam is cut from 1-inch mahogany and is fitted between the sheers. The intermediate deck beams, strongbacks and deck battens are next fitted into position as indicated in the drawings.

**FORWARD DECK:** The decking can either be mahogany or Douglas fir if the hull is to be painted. The decking is nailed on with 1-inch nails spaced 2 inches apart. The motor well and bridge deck area is fabricated per the drawings indicated. The rear seat and floorboards may be 1/4-inch or 3/8-inch plywood.

**FIBERGLASSING:** The hull can be fiberglassed or not, as the builder desires. Fir plywood has a habit of checking and, of course, fiberglass will eliminate this problem. Kits for fiberglassing the L. Dorado are available from "Glen L." These contain cloth, resin, squeegee, brush, acetone and instructions.

**POWER:** The motor used can be almost any practical size to a maximum of 40 horsepower. Such a motor will provide a speed of 35+ miles per hour. With varying passenger and motor weights you may find it necessary to shift the tank and/or battery forward. It is also permissible to shift the front seat forward to gain more room.

**CONCLUSION:** Building the L. Dorado is a lot of fun. It attracts attention wherever it goes, and when built as described, she goes like a bomb. Best of luck, and send us some photos on the finished product. •

## BILL OF MATERIALS

With the Frame Kit, the following are the required materials for the basic hull. If the Frame Kit is not purchased, add the materials on the full size drawings of the frames. All lumber noted allows length for fitting. All widths are actual sizes. All thicknesses given are actual except those listed as 1", these will be standard four quarters material finished as full as possible.

### D. F. PLYWOOD

Planking, bottom—1 piece 1/4"x4'x14'  
Planking, side—2 pieces 1/4"x30"x14'  
Seats, inner tails, floorboards, etc.—  
2 pieces 1/4"x4'x8'

### MAHOGANY OR D. F. PLYWOOD

Decking—2 pieces 1/4"x3'x8'

### SPRUCE OR MAHOGANY

Keel—1 piece 1"x2"x9'6"  
Chines—2 pieces 1"x2"x14'  
Battens—2 pieces 1"x2"x10'  
2 pieces 1"x2"x8'  
2 pieces 1"x2"x7'6"  
Outer keel (optional alum. fin)—  
1 piece 1"x2"x7'  
Seat-back beam—1 piece 1"x4"x4'6"  
Strongback—1 piece 1"x2"x6'  
Deck battens—2 pieces 1"x2"x4'6"

### MAHOGANY

Carling—2 pieces 1"x6"x7'6"  
Dashboard beam—1 piece 1"x6"x6'  
Seats, well & misc. blocking—approx.  
12 random board feet  
Fin blocking—1 piece 2"x6"x18"  
Bumper rails—2 pieces 1"x2"x5'

### SPRUCE

Sheer clamps—4 pieces 5/8"x1 1/4"x14'

**FASTENINGS:** all screws are bronze or hot dipped galvanized iron, all nails refer to annular ring monel or bronze.

2" #10 F. H. Screws—1 gross  
1" #8 F. H. Screws—5 gross  
1 1/2" #8 F. H. Screws—1 gross  
1" nails—approx. 700 or 2 lbs.  
2 galvanized carriage bolts—1/4"x5 1/2"  
with washers

Glue: plastic resin "Weldwood", 5 lbs;  
or comparable volume of resorcinol type.

**NOTE:** Several options are given in building specifications. Builder is advised to use above material list as general guide only checking against specifications.

# How To BUILD 20 BOATS

## MIST MISS

By Glen L. Witt, N.A.

Here is a husky, practical inboard utility.

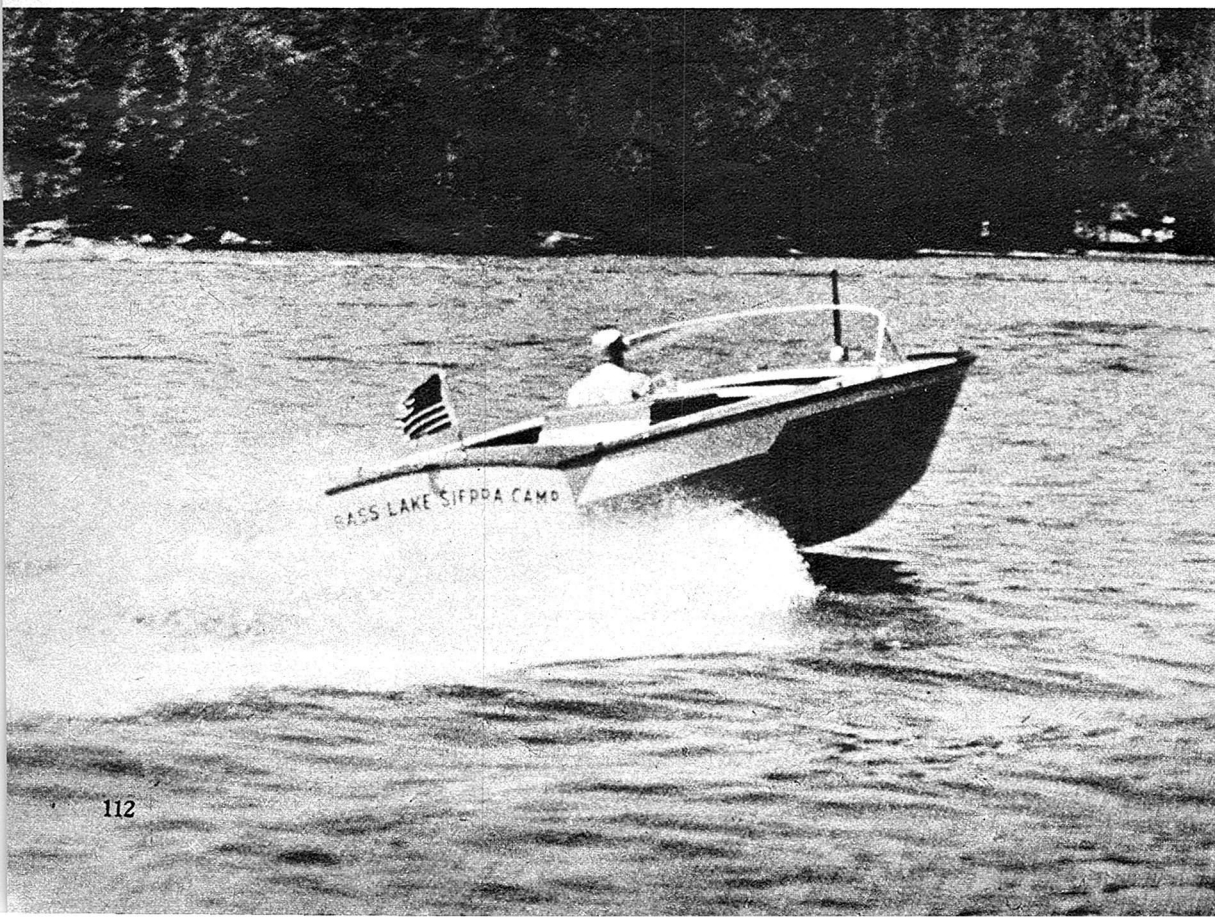
**H**ERE IS AN EXCELLENT 18-foot 2-inch, in overall length, inboard runabout. The 7-foot 1-inch beam combined with the generous vee and flare makes Mist Miss a dry, safe practical inboard utility. You sit in comfortable front cockpit protected by a fixed windshield. After you push the starter button and ease away from the dock you can pull back the throttle and give her the gun. The hull responds instantly. She is up on the plane and away with the pilings flying by like a picket fence. Yes, the Mist Miss is truly an ideal, all-around utility boat for the person who demands a perfect combination of

performance and styling (as photos show).

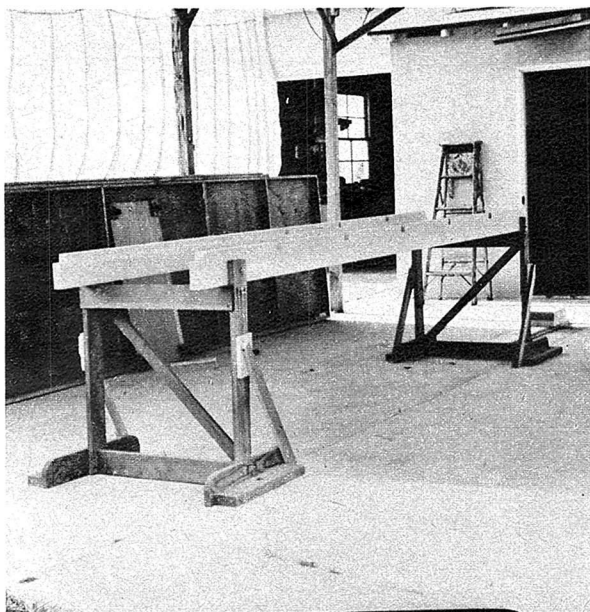
The Mist Miss can be powered with any of the popular auto conversions. She has been built and almost all of the practical motors used. Since the motor is directly over the center of buoyancy, changes in the weight of the motor do not affect the trim.

The bill of materials indicates the type of material, fastenings and plywood to be used. Be sure and use only materials and fittings intended for a marine atmosphere. In all cases, the material in the building instructions and bill of materials is listed in order of preference.

**DESIGNED** for the amateur builder, Mist Miss is perfect for all types of use, and goes fast.



**BUILDING** form should be anchored to floor. Motor stringers in position below.



**FRAMES** are mounted on leveled motor stringers. Note blocking for breasthook.



In this text, even though mention may not be made of gluing a joint, all joints should be glued with a hard setting type glue. Resorcinol glue is the best, however, the urea resin can be considered completely satisfactory.

**FRAMES:** The frame members are 1-inch mahogany, and are molded to a minimum width of 3 inches. Plywood gussets,  $\frac{1}{4}$  inch or  $\frac{3}{8}$  inch thick should be used on either side of frame joints, extending a minimum of 6 inches along the joining members. Fasten with a minimum of five  $1\frac{1}{4}$ -inch annular ring type nails or  $\frac{3}{4}$ -inch No. 8 screws in each member. Notches for the keel, chines, and sheers can be cut at time of assembly, taking the dimensions directly from the material to be used.

**TRANSOM:** The transom is made from  $\frac{3}{8}$ -inch marine grade plywood. This transom is framed with 1-inch mahogany or oak, molded a minimum of 3 inches in width. The bottom frame member of the transom is double. The notches for the longitudinals are cut in the forward bottom frame member only. The upright on the transom, 1x3 inch in size, should be spaced to accommodate the motor. These, in turn,

will be fastened to the motor stringers.

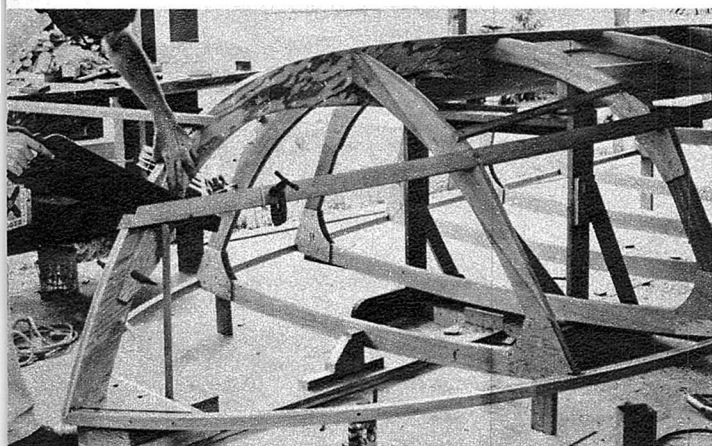
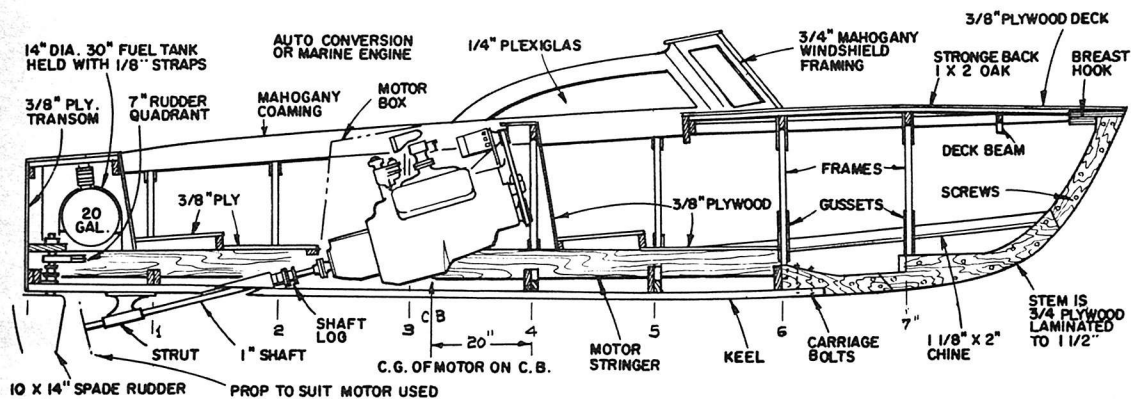
**STEM:** The stem is laminated from two pieces of  $\frac{3}{4}$ -inch plywood, cut to the shape shown, and molded a minimum of 4 inches in width. Fasten the laminations with  $1\frac{1}{2}$ -inch No. 8 screws, spaced 6 inches apart.

**BREASTHOOK:** The breasthook is assembled from two layers of  $\frac{3}{4}$ -inch plywood to rest on top of the stem, with one layer locking around it.

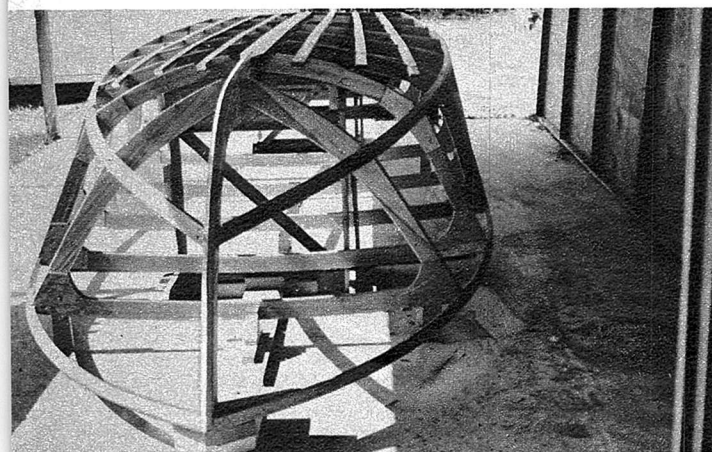
**MOTOR STRINGERS:** The motor stringers are cut from 2x6-inch (lumberyard size) Douglas fir or spruce. They are notched for each of the frames, as indicated in the plans.

**KEEL:** The  $1\frac{1}{4}$ x4-inch keel is notched into each of the frames and transom, and fastened with 3-inch No. 14 screws. Bolt the keel to the stem with 5/16-inch carriage bolts.

**ASSEMBLY:** The boat is constructed bottom side up on the motor stringers. These stringers are set up on sawhorses or legs about 33 inches above the floor, spaced to suit the motor to be used, usually 24 inches to 28 inches, level both longitudinally and athwartships. The frames are

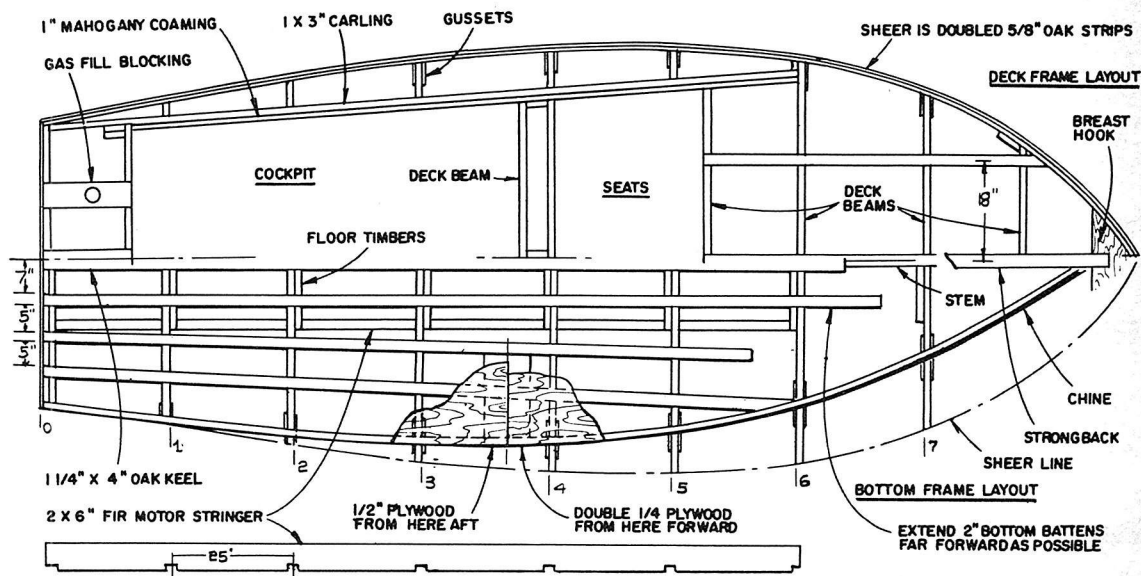


FIT CHINES at stem to make chine line match with center of the stem.



COMPLETED framework of Mist Miss. Next fair bottom and sides.





slipped over the stringers and fitted in their respective notches from No. 1 to No. 5. The transom is bolted in place to the up-rights with 5/16-inch carriage bolts. Each of the frames is held into the motor stringers with angle iron or brass, bolted through the frame and stringers with 1/4-inch carriage bolts. Block the stem, breasthook at the proper distance below the building form. Minor adjustments may be required on the frames to put them into proper alignment, so that all lines are clean and flowing ones. The form supporting the motor stringers and the frames should be securely anchored to the floor to prevent movement during construction.

**CHINES:** The 1 1/8x2-inch chines are notched into the frames and fastened with 2-inch No. 10 screws. Each of the notches at the frames should be so angled as to enable the chine to lay flat to the notches.

**SHEER:** The sheer clamp is built up from two laminations of 3/8x1 1/4-inch pieces of oak or mahogany, and is set in vertically in notches in the frames from No. 4 forward.

**BATTENS:** The bottom battens are 1x2-inch oak or mahogany, and extend as far forward as possible. Notch each of them

into the frames, and fasten with 2-inch No. 10 screws.

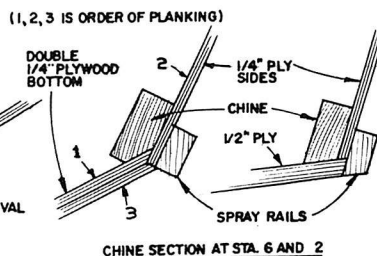
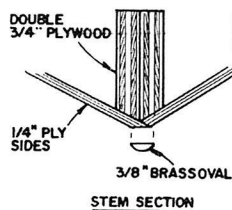
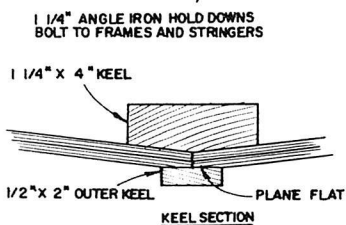
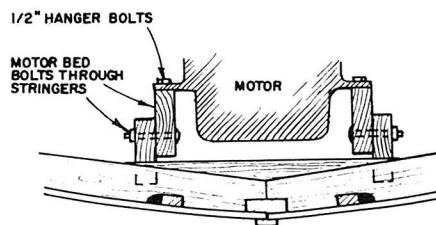
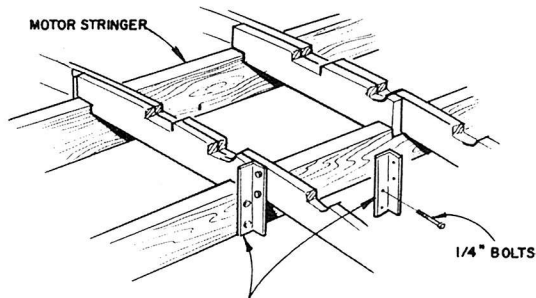
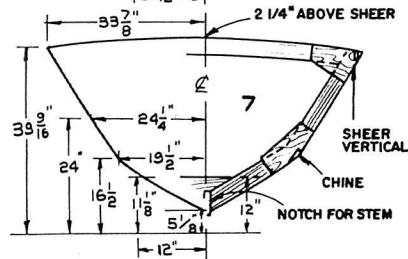
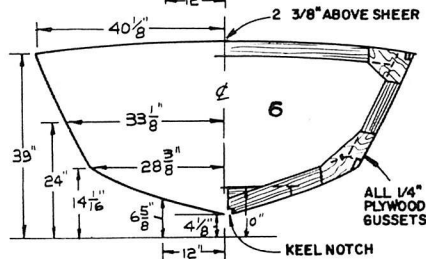
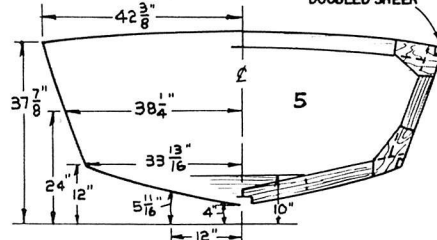
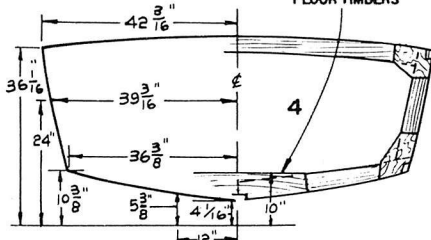
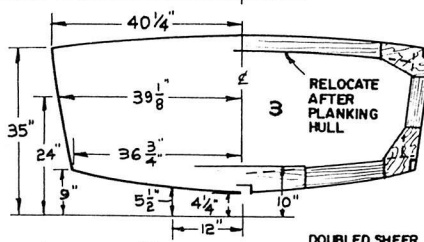
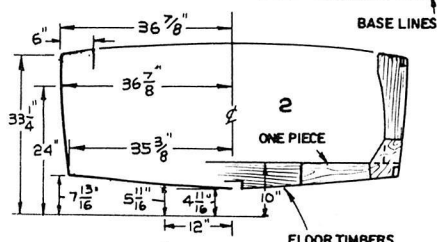
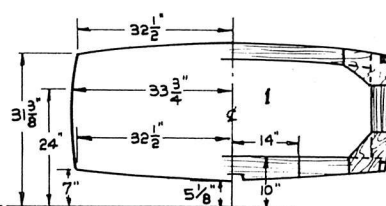
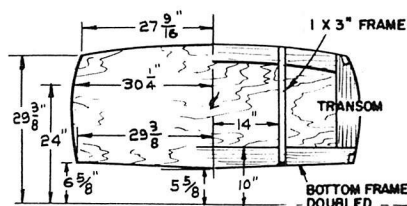
**LIMBERS:** Limbers are drain holes cut along the outboard side of all longitudinals to allow the bilge water to drain aft.

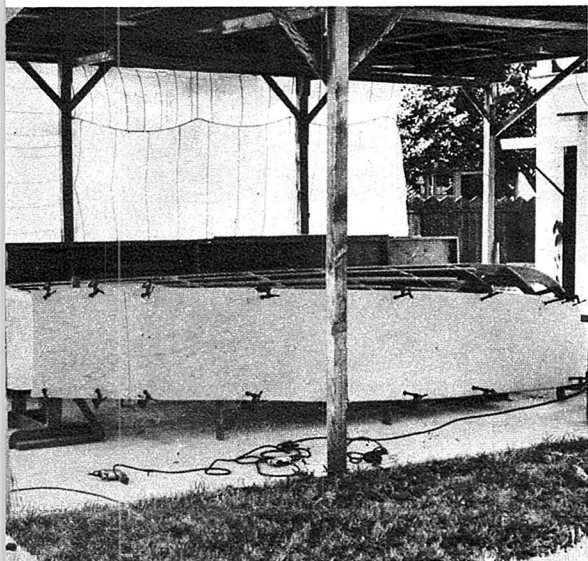
**FAIRING:** All of the members must be faired or beveled so that the planking skin will mate to all members. Check the drawings and the various sections of the chine and the keel. Use a small length of plywood to check the fit as you work along, and be sure that each portion along all of the members mate to the planking surface.

**PLANKING:** There are several options on the planking panels for the Mist Miss.

#### PLAN SET AND FULL SIZE PATTERNS

are available for building this boat at a cost of \$19.00. FRAME KITS which include the above are \$180.00 (plus shipping costs). Complete PLAN SET alone sells for \$11.50. Send all orders to Glen L. Marine Designs, 9152 N. Rosecrans, Bellflower, California. Specify Plan FB-MIST MISS in desired form.





**SIDE PLANKING** is put on first, anchor with screws or with clamps for fitting as here.

If a light hull is desired,  $\frac{1}{4}$ -inch plywood can be used on the sides, and  $\frac{3}{8}$  inch on the bottom. For rough usage, the sides become  $\frac{3}{8}$  inch thick, and the bottom put on with two layers of  $\frac{1}{4}$  inch in forward portion, joined by a butt block with a  $\frac{1}{2}$ -inch sheet in the aft portion.

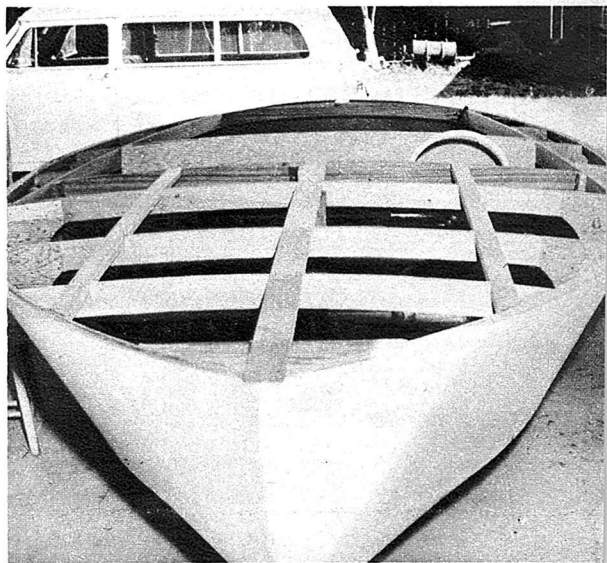
**KEEL STRIP:** The keel strip or skeg is detailed in the drawings, fastened over the joint of the bottom planking on the bottom.

**SPRAY RAIL:** a  $1 \times 1\frac{1}{4}$ -inch spray rail extends from the transom to the stem. Some people prefer to omit this member, however, it is desirable for rough water work.

**FIBERGLASS:** Fiberglass on any fir plywood boat is desirable. If the hull is fiberglassed, external capping should be left until after the fiberglass is applied. Complete kits are available for fiberglassing the Mist Miss from "Glen L." The one intended for covering the bottom only is priced at \$38.00 FOB, while the one for covering the bottom, sides and transom is priced at \$79.50 FOB. These kits provide adequate material for covering the described area and include cloth, resin, brushes, squeegee, and instructions.

**CARLING:** The carling is that member that forms the extremity of the cockpit. The deck beams in the way of this member must be removed and relocated as shown.

**STRONGBACK AND DECK BAT-**



**RIGHTED HULL** as viewed from the bow showing battens, strongback, and wheel.

**TENS:** The  $1 \times 3$ -inch strongback and the  $1 \times 2$ -inch deck battens are notched into the deck beams and fastened in place with 2-inch No. 10 screws.

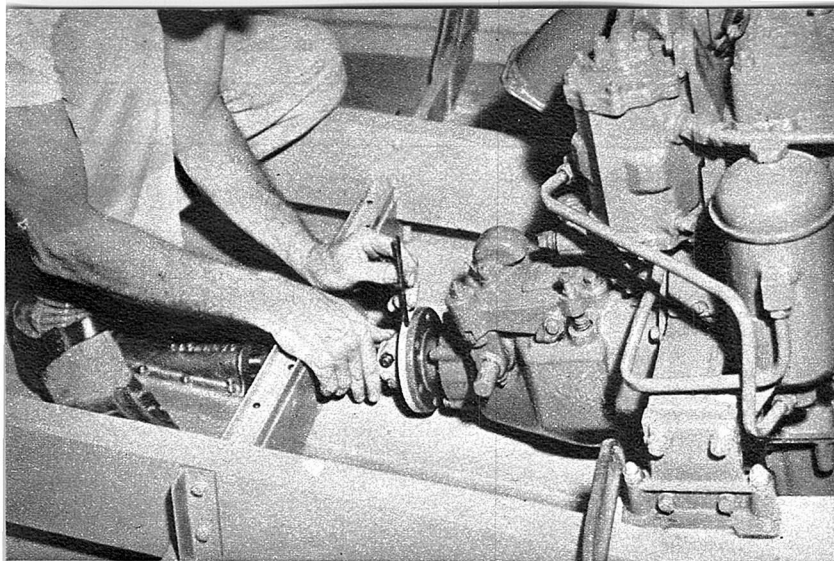
**DECKING:** The decking may be fir plywood or, if a natural finish is desired, mahogany. It should be  $\frac{3}{8}$  inch thick, put on in such a way that there will be a joint over the strongback at the centerline. The fore decking is joined to the side decking with a butt joint, but never at a beam ending, always at a midpoint between frames.

**WINDSHIELD:** A windshield of the fixed type may be used, however, the more popular curved variety, as shown in the action photographs, is optional.

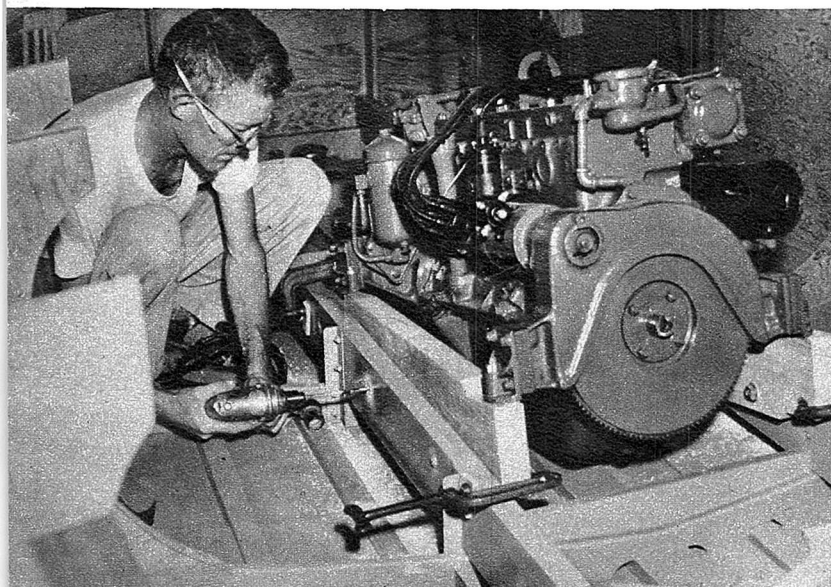
**GAS TANK:** A standard gas tank is used with a filler pipe brought up to a flush deck fitting on the aft deck. An overflow vent should be provided.

**MOTOR INSTALLATION:** The motor may vary considerably. Since motor installation in a small boat is quite an involved project, "Glen L." has made available a book, entitled "INBOARD MOTOR INSTALLATIONS IN SMALL BOATS." The book is priced at \$6.00 postpaid and will cover most of the problems involved in the installation of an inboard motor in a hull similar to the Mist Miss.

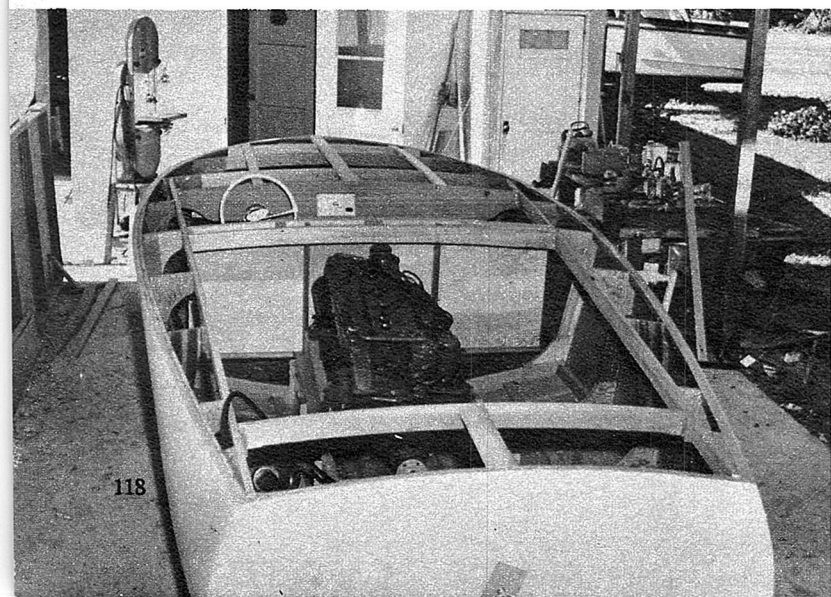
**STRUT:** A strut of the proper angle and for the diameter shaft to be used should be installed. All of the underwater fittings for



**ALIGNMENT** of motor to shaft must be carefully done. Here builder uses "feeler" gauges to check on clearance.



**AFTER** the motor alignment has been rechecked, the motor beds are clamped and bolted through motor stringers.



**THE DECKING** framework ready for decking. Note that the motor and controls have been installed before decking.



the Mist Miss are available, and a free catalog will be sent by "Glen L" upon request, covering underwater fittings.

**SHAFT LOG:** A rubber-necked, self-aligning shaft log should be fastened to the keel over the shaft hole, as indicated in the plans.

**PROPELLER:** A propeller of diameter and pitch to suit the motor should be used. Information as to propellers may be obtained from propeller manufacturers or the motor manufacturer.

**SHAFT:** A stainless steel or bronze shaft, 1 inch in diameter should be keyed to suit the motor coupling, and have a standard taper and key on the propeller end.

**RUDDER:** Various types of rudders can be used on the Mist Miss. Size is approximately as indicated on the plans for lower power. With higher powered motors, a smaller size can be used.

**RUDDER STUFFING:** A standard rudder stuffing box is used at the point the rudder goes through the bottom of the boat.

**EXHAUST SYSTEM:** The exhaust lines should be sufficient size to suit the motor installed and lead in a gentle slope alongside the motor stringers aft through exhaust flanges in the transom. Cooling water is to be sent into the exhaust pipes.

**CONTROLS:** The reverse, steering, and throttle controls, along with instruments, must be sent to the front cockpit at the convenience of the driver. Push-pull or drag link steering and controls are preferable in all cases.

**FITTINGS:** The boat should be equipped with lights to conform with the Coast Guard or local regulations. A husky cleat should be located fore and aft, bolted into place. Chocks should be located fore and aft, to protect the rubbing of ropes along the sheer when anchored. The motor and tank compartment should be ventilated to provide a complete flow of air through the boat. A bilge pump, fire extinguishers, and life preservers for all on board, in addition to adequate lines and anchors for the area you intend to boat in, are musts for safe and sane boating.

**CONCLUSION:** The foregoing has described the building of a fine little craft. Build her like the plans, and you will have a boat you can be proud of. Add kinks, hooks, or gillhoolys to the bottom, or alter the location of the major weights, and please don't blame us for the results. •

## BILL OF MATERIALS

(Approximate list only. For Basic Hull, check text for options)

### OAK OR MAHOGANY

- \* Frames—75 bd. ft. of random 1" stock
- Keel—1 piece 1¼"x4"x13'6"
- Chines—2 pieces 1½"x2"x18'
- Sheer clamps—4 pieces ⅝"x1¼"x20'
- Battens—2 pieces 1"x2"x16'  
4 pieces 1"x2"x14'
- Spray rail—2 pieces ¾"x1¼"x18'
- Carling—2 pieces 1"x5"x13'

### DOUGLAS FIR PLYWOOD

- \* Transom & frame gussets—1 piece ¼"x48"x96"
- \* Stem & breasthook—1 piece ¾"x48"x96"
- Side planking—2 pieces ¼" or ⅜" x36"x20'  
(or material in lengths to splice for 20' length)
- Bottom planking—2 pieces ½"x48"x96"  
4 pieces ¼"x48"x120"

### OAK

- Keel strip—1 piece 1"x2"x14'

### MAHOGANY

- Bumper rail—2 pieces 1"x3"x6'6"

### DOUGLAS FIR

- Motor stringers—2 pieces 2"x6"x13'

### FASTENINGS

- \* Screws for transom and frames only:

- ¾" #8 F.H. Wood screws—4 gross
- 1½" #8 F.H. Wood screws—1 gross

#### Screws:

- 1" #8 F.H.—5 gross
- 1¼" #8 F.H.—5 dozen
- 1½" #8 F.H.—8 gross
- 2" #10 F.H.—1 gross
- 3" #14 F.H.—2 dozen

#### Nails: 1" Anchor Fast—2 lbs.

- Carriage Bolts: Galvanized or Everdur Bronze
- ¼"x2"—2 dozen (for motor stringer angle clips)
- 5/16"x3"—4 only (for bolting stringers to transom)

- 5/16"x5"—3 only (for bolting keel to stem)

#### Machine screws: (for bolting butt joints)

- 3/16" F.H. Brass with nuts and washers—200
- "Weldwood" or equal glue—10 lbs.

#### Angle brass or iron:

- ½"x1¼"x8" long—12

\* Items marked with asterisk not required with Frame Kit.

How To  
BUILD  
**20**  
BOATS

# PAKEDO

By Donald H. Smith, SSCD

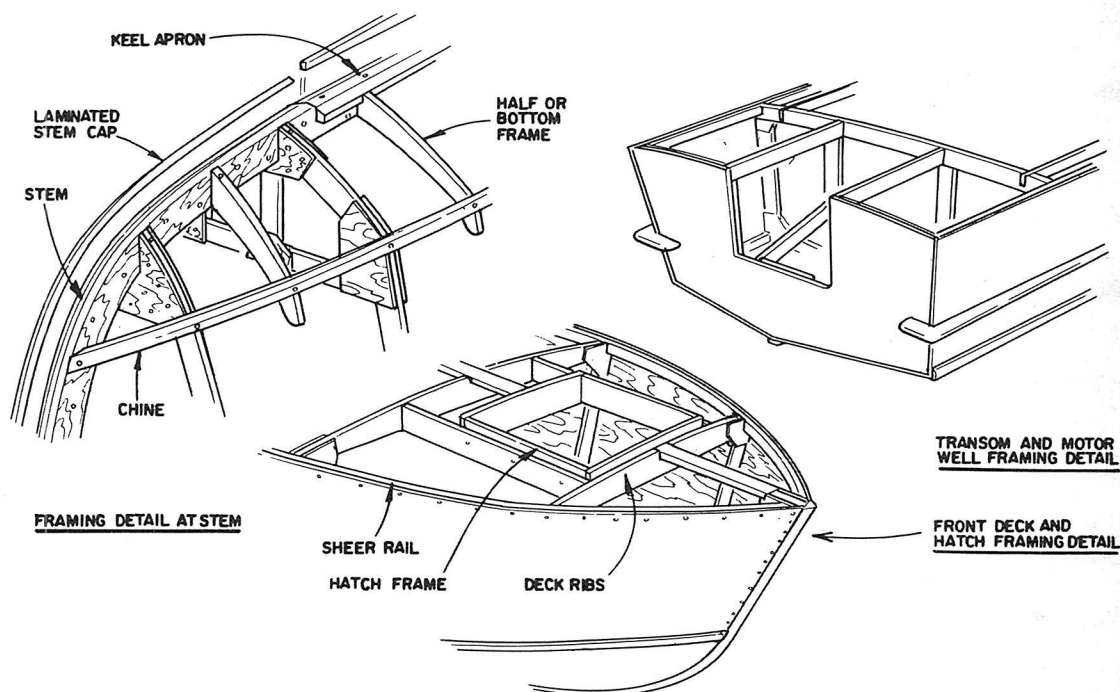
An ideal 18-ft. plywood outboard overnighter.



LAYING OUT stem components, right, before lamination and fastening with screws.

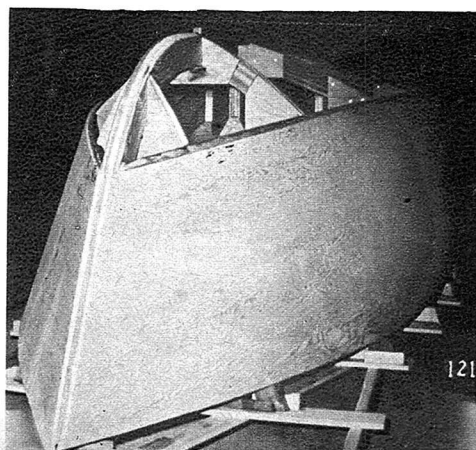
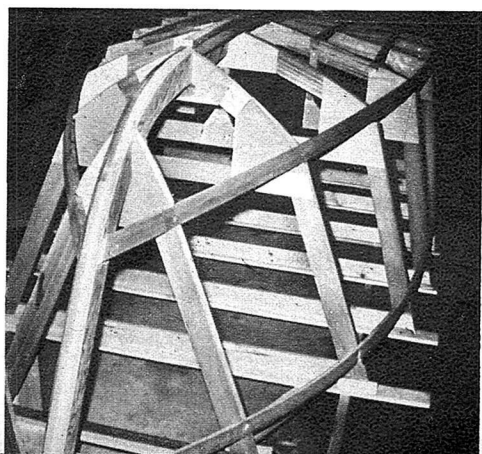
**O**VER THE PAST DECADE, the outboard cruiser seems to have pretty well established its popularity as a family boat with some real cruiser features. In the size range below twenty feet, these craft are generally light in weight, easily driven by a moderate amount of outboard engine horsepower. Pakedo was designed to fit into such a category; her construction is light and strong, featuring plywood planking over oak or mahogany framing. Conically developed hull lines with a minimum

of severe bends have placed her well within the capabilities of any amateur back-yard boat builder. Pakedo's 17-foot 11-inch over-all length allows overnight accommodations for two persons in the cabin and two more out in the cockpit. This length combined with a beam just over seven feet will allow legal trailering in all states and she will be reasonably easy to handle in getting on or off a good brand of standard boat trailer. From a power and speed standpoint, Pakedo will cruise at a



**PAKEDO** is shown fully framed, ready for hull planking. Note building jig style.

**WITH SIDE** planking in place to stiffen the structure, bottom is ready to plank.



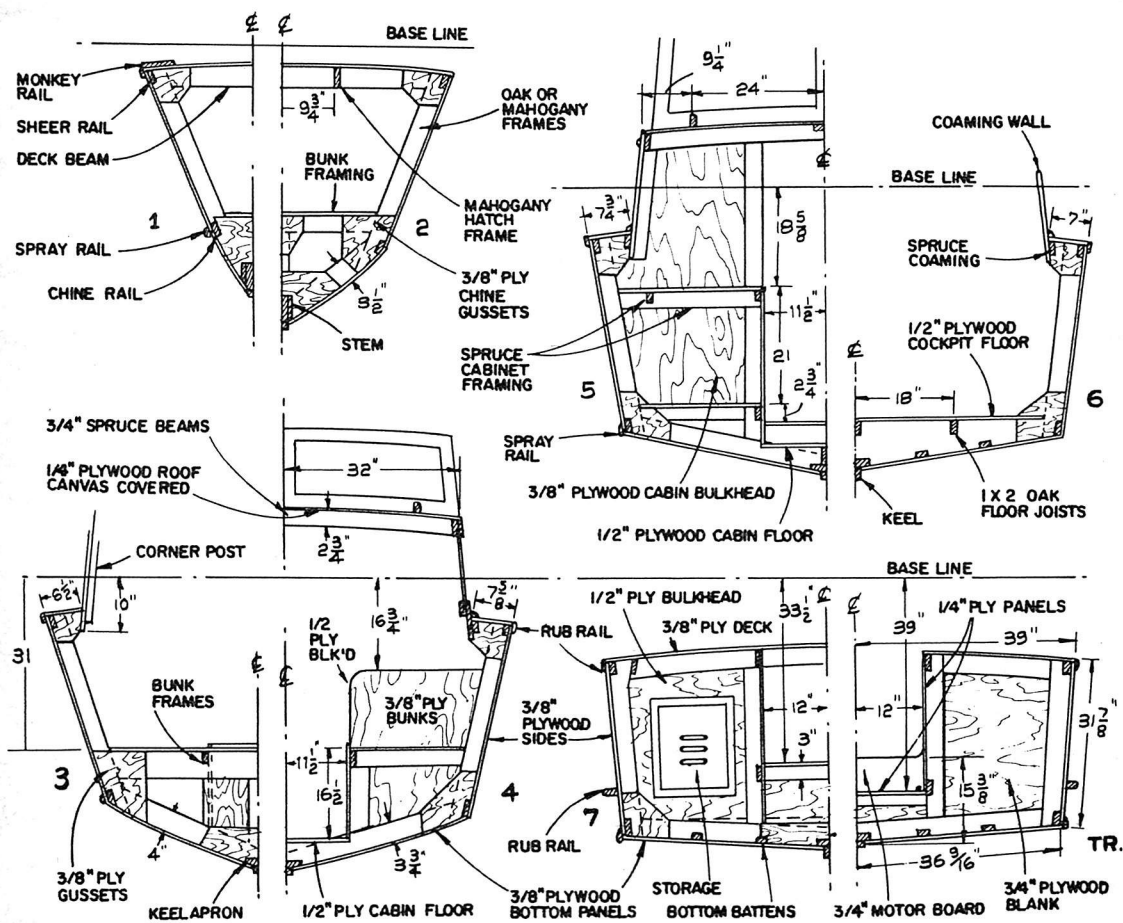
respectable 20 mph with a 40 to 50 hp engine. She has been clocked at 18 mph with 35 and 40 hp engines under relatively light loads.

Economy and simplicity are keynotes of Pakedo's design and she has lots of freeboard, ample beam, and topside flare. These characteristics render her a dry boat under normal sea conditions on the lakes, bays, and rivers for which she was designed. A small skeg reduces drift when running or maneuvering at low speeds and affords a degree of protection to the propeller.

The V-berths forward will comfortably sleep two six-footers and the galley will permit the installation of a small sink and marine stove. A galley cabinet will hold the stores and supplies as well as serving as an icebox if so desired and constructed. On the port side, a berth extension piece covers a marine toilet. This is rigged so that the plywood berth panel can be raised, swinging back against the coaming or in-

side of the hull. Space below the bunks is such as to allow storage of considerable amounts of gear. The roomy cockpit contains a deck area of about 36 square feet, big enough for a helmsman's folding seat and a couple of deck chairs. The outboard motor will be installed in a self-draining well as shown, to prevent following seas from coming aboard. A feature is included which is not always found on outboard cruisers of this size. This refers to the hatch in the forward deck which serves as a ventilator while under way but also provides access to or from the cabin in addition to the regular door opening. In any cabin boat, such a simple safety feature should be recommended or even required.

So much for general description. The actual construction of Pakedo can begin with the selection of a suitable floor area on which to lay down the full size lines. Once such an area is located, the complete lines drawings must be reconstructed from the offset table and all points connected by fair

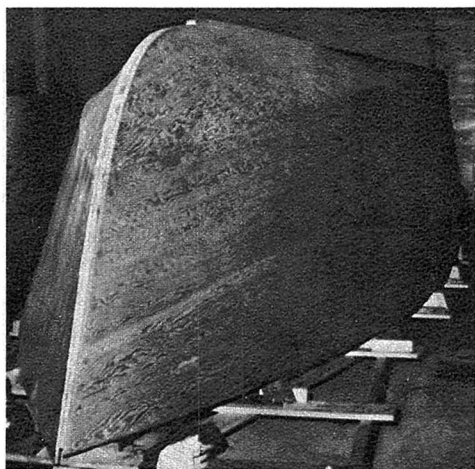




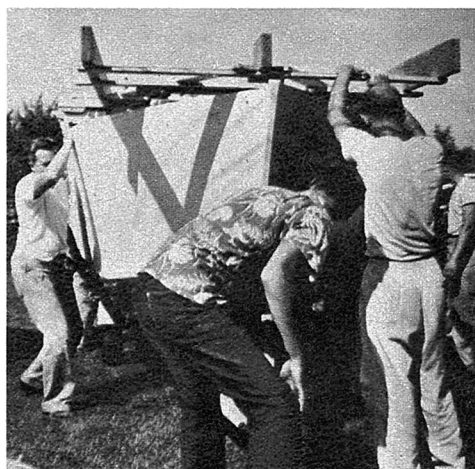
lines. Perhaps the easiest way to do this is to have one person read the offsets while another marks off the various points on corresponding station lines which will have been laid out perpendicularly to the base and center lines. By sweeping a  $\frac{3}{4}$ -inch pine batten through the points, fair curves for the sheer and chine can be drawn on the loft floor. The resulting body plan will permit the laying out of frame stock either directly over the full size drawing or by making patterns from the latter. In either case, the frames can be built up as shown on the sectional drawings.

When the frames have been assembled, they are ready to be set up for hull construction. It is recommended that a building jig be built prior to this operation. This can best be done by setting two 2x6-inch boards on edge, parallel to one another and separated by about 6 feet. At intervals corresponding to frame spacing, there should be connecting members of 1x4-inch stock. These will lie flat over the tops of the two

longitudinal pieces and should be up to seven feet in length. The hull will, of course, be erected bottom side up. Therefore, the individual frames should have a cross spawl connecting the frame heels and these spawls may be set upon our jig at the proper stations. When the frames have been set up as described, they can be fastened to the keelson with 3-inch No. 12 flathead wood screws. Each frame must be plumb and straight prior to fastening. The stem, which can be built up at any time now, is to be let into the forward frames as shown, and secured to them and the keelson. The transom is to be raked at its proper angle and fastened to the keelson or keel apron. The chines and sheer clamps may be sprung into place after the frame and keel set up. These should be put in simultaneously working alternately on both sides of the hull until the members from each side are warped around to the stem. In this way, there will be no chance of springing the erected framework out of

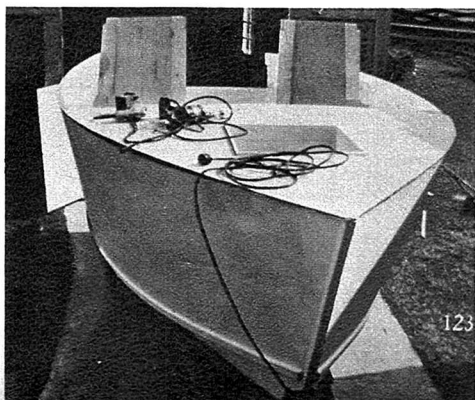


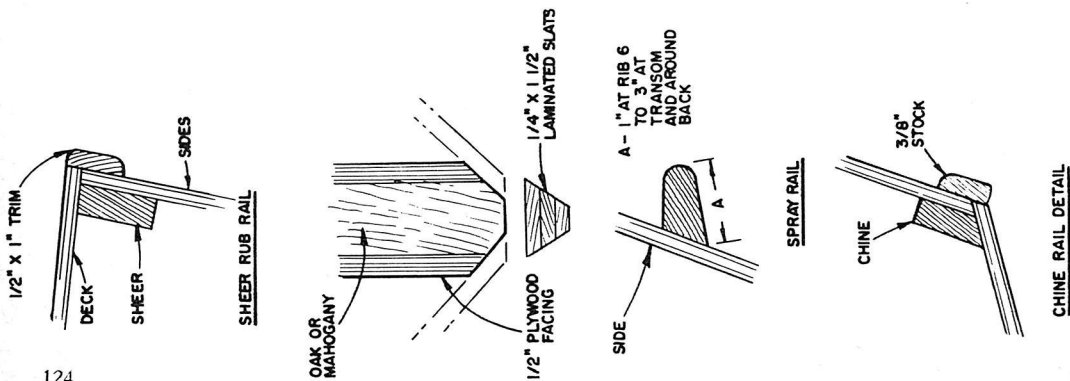
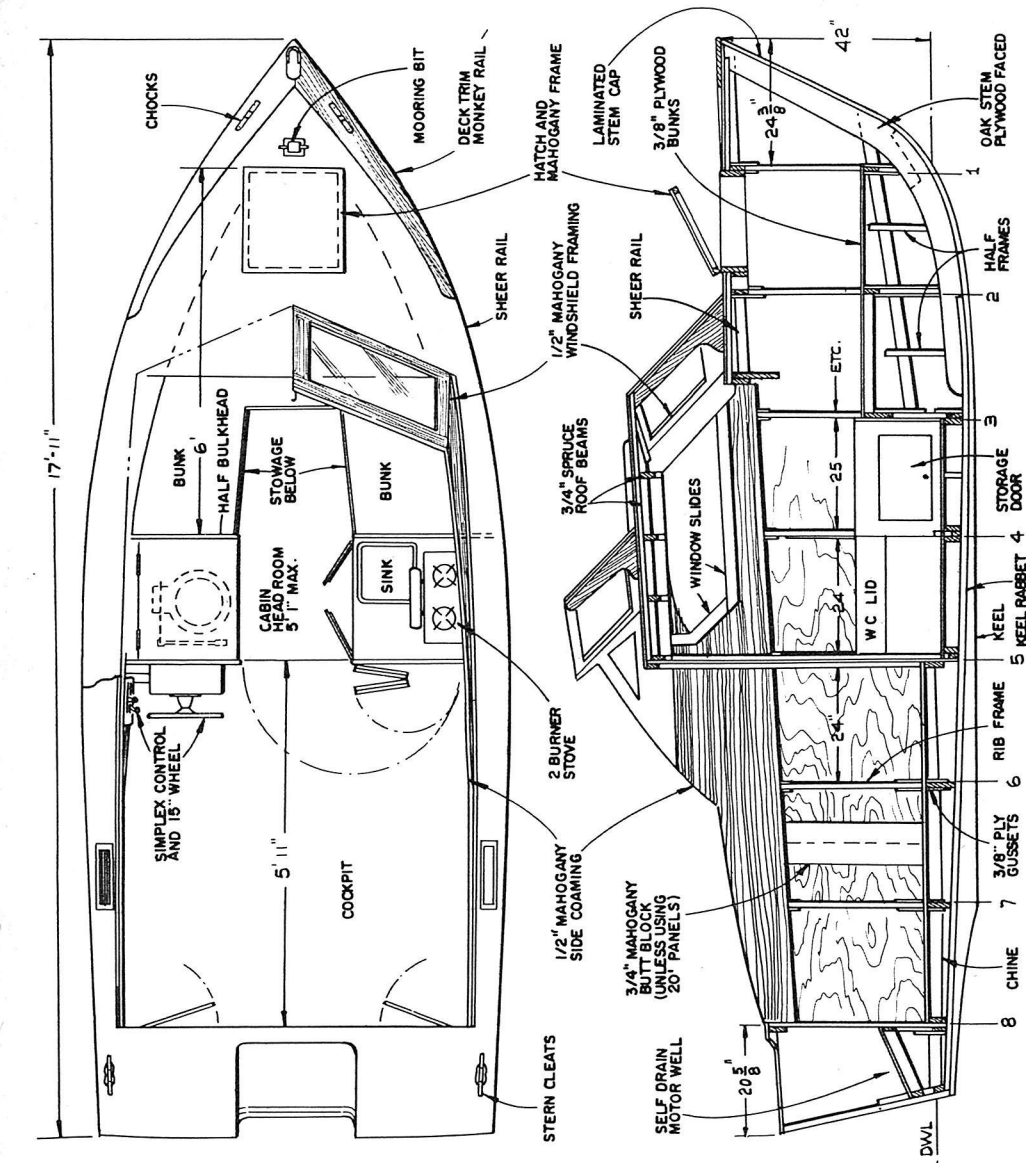
**COMPLETELY** planked and ready for stem cap. Sides are one continuous length.



**TURNING** the hull over, ready to remove building jig and begin the interior work.

**WITH THE** forward deck and hatchway completed, the cabin installation may begin.





place. The final framing operation relates to the installation of the bottom battens which are let into the bottom frame members as depicted on the plans. It is suggested that all connecting surfaces and joints be made up with bedding compound or marine glue in addition to the size wood screws recommended for these areas of construction.

With the framing completed, the planking can begin. Prior to any planking, the entire frame assembly must be planed and shaped so that the faying or mating surfaces will allow the plywood to lie flat against them. When this is done, the plywood panels may be cut out from patterns or from direct measurement against the erected framework. All faying surfaces must be liberally coated with marine bedding compound before the application of the plywood planking. Following this, the plywood is pressed against the framing and clamped wherever possible while the screw fastenings are driven. It is best to work from the stern toward the stem in the screw fastening operation. When the planking is completed, final trimming will be the next step, followed by priming and painting of the hull. Then, with the help of about a half-dozen pairs of hands or a suitable block and tackle, the hull can be turned upright and either set into a preconstructed cradle or placed upon a boat trailer.

Next, the deck beams, flooring, coamings, and decking may be installed. Before going too far on the interior joinery, the inside of the hull should be completely painted. As various interior framing and related components are installed, it may be well to give them their required coats of paint or varnish at that time.

The cabin bulkheads, berth framing, berth tops and the like will best precede the installation of the cabin roof beams. This is a matter of convenience as well as providing natural light by which to complete the cabin interior work. When all deck beams, roof beams, and the hatchway are in place, then they should be coated, such as was the hull framing, prior to the application of the decking. •

#### LARGE SCALE BLUEPRINTS

for this boat will simplify construction. These are available at \$15.00 per set. Send all orders to Donald H. Smith, 484 Everett St., Crystal Lake, Ill. Specify FB-Pakedo.

## BILL OF MATERIALS

### OAK OR MAHOGANY

Keel apron—1 piece 1"x5"x14'  
Frame sides— $\frac{3}{4}$ "x3"x42'  
Frame bottoms— $\frac{3}{4}$ "x12"x33'  
Half frames— $\frac{3}{4}$ "x6"x30'  
Chines—1"x2 $\frac{1}{2}$ "x36'  
Bottom battens— $\frac{3}{4}$ "x1 $\frac{1}{2}$ "x40'  
Sheer clamps— $\frac{3}{4}$ "x2"x40'  
Deck beams— $\frac{3}{4}$ "x4"x20'  
King plank— $\frac{3}{4}$ "x4"x4'

### MAHOGANY

Hatch framing— $\frac{3}{4}$ "x6"x6'  
Cabin corner posts— $\frac{3}{4}$ "x5"x5'  
Windshield framing—1" thick stock as per plans, make rabbets by laminating overlapped  $\frac{1}{2}$ " thick members.  
Spray rail—1"x3"x14'  
Chine rail— $\frac{5}{8}$ "x1 $\frac{1}{2}$ "x36'  
Sheer rub rail—1"x1 $\frac{1}{4}$ "x40'

### PLYWOOD

Hull planking—2 panels  $\frac{3}{8}$ "x4"x20' marine  
2 panels  $\frac{3}{8}$ "x4"x8'  
2 panels  $\frac{3}{8}$ "x4"x10'  
Cabin sides, coaming—1 panel  $\frac{1}{2}$ "x4"x14' mahogany  
Cabin front—1 panel  $\frac{1}{2}$ "x2'x6' mahogany  
Decking—fore and aft, 2 panels  $\frac{3}{8}$ "x4"x8' side, use leftovers from hull side planking  
Transoms—1 panel  $\frac{3}{4}$ "x4"x14'  
Bulkhead—1 panel  $\frac{3}{8}$ "x4"x12' marine  
Cabin roof—1 panel  $\frac{1}{4}$ "x4"x12'  
Motor well—1 panel  $\frac{1}{4}$ "x2'x6'  
Cabin floor—1 panel  $\frac{1}{2}$ "x2'x4'  
Cockpit sole (floor)—3 panels  $\frac{1}{2}$ "x2'x6'  
Gussets— $\frac{3}{8}$ " marine as per plans, use scraps  
Interior paneling—bunks, cabinets etc.,  $\frac{1}{4}$ " to  $\frac{3}{4}$ "

### MISCELLANEOUS

Stem—2"x10"x9' oak, mahogany or fir, core pieces  
 $\frac{1}{2}$ "x2'x6' marine plywood, covering pieces  
Keel or skeg—1 $\frac{3}{4}$ "x6"x14' oak  
Roof beams— $\frac{3}{4}$ "x3"x25' spruce or fir  
Roof support batten— $\frac{3}{4}$ "x3"x5' spruce or fir  
Cabin clamp— $\frac{3}{4}$ "x2 $\frac{3}{4}$ "x7' spruce or fir  
Window slides— $\frac{3}{4}$ "x2"x10' spruce or fir  
Floor stringers—1"x2" oak, mahogany or fir  
Interior framing— $\frac{3}{4}$ " sided, fir or spruce stock. For pieces to be finished natural, use mahogany. Use scraps.

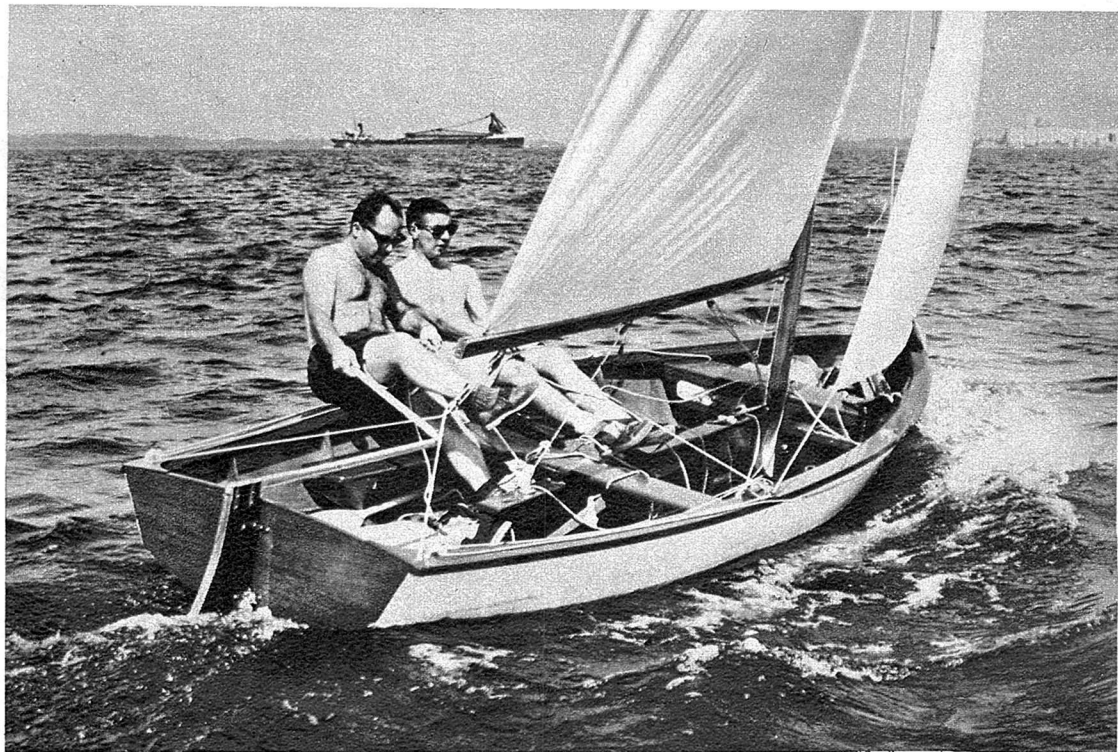
NOTE: All oak specified must be of Northern White variety and mahogany should be either a densely grained Philippine or Honduras species if obtainable. Spruce and fir will be clear, straight stock. All plywood must be of marine grade.

# How To BUILD 20 BOATS

## BANTAM

By Leslie E. Bailey  
Secretary, Rhodes Bantam Class Association

A 14½ footer wonderful for racing or day-sailing.



IN A brisk breeze the Bantam really moves, yet she is as stable as well as a sporty sailer.

**M**ANY EXPERIENCED skippers have stepped into a Rhodes Bantam, wondered aloud about the room and comfort in its fourteen feet, exclaimed about its exceptional stability and then found a boat with a real challenge to their sailing ability. For all its good performance, the Bantam is an ideal boat for family sailing, one which doesn't penalize the inexperienced.

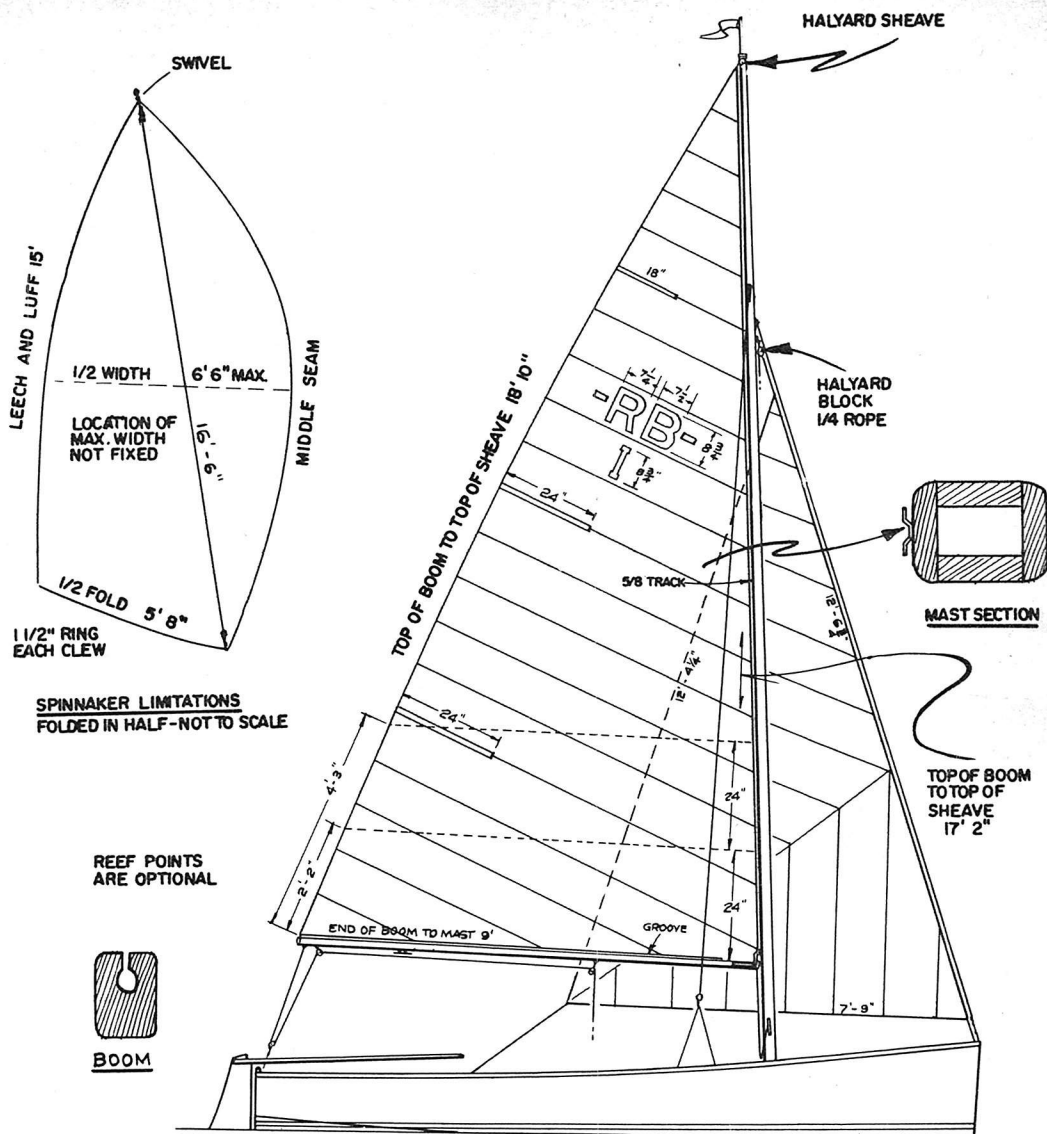
Another beauty of the Bantam is its simplicity. You don't have to be the best shipwright in the world nor do you need a shop full of special tools. A comfortable chair, a good standard text on boat building and the usual tools of a home shop combined with patience and care and you're on your

way. The Bantam is a strict one-design class where home built boats are on a par with factory boats, and there are no "gold-platers."

Just about all framed and planked boats are built the same way, upside down on a "strong back." This procedure is well outlined in a number of good texts and should be followed carefully, from drawing full-sized lines to careful setting up of the finished frames. It's during this stage of construction you'll find your comfortable chair the most useful tool in the shop.

From time to time, it'll seem you're making no progress at all and you'll never finish. Other times, you'll begin to tire or lose



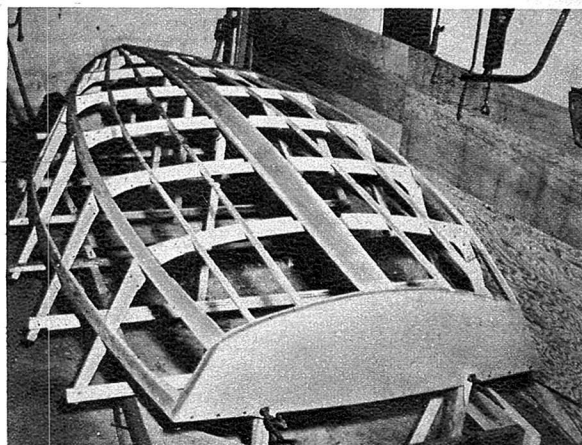


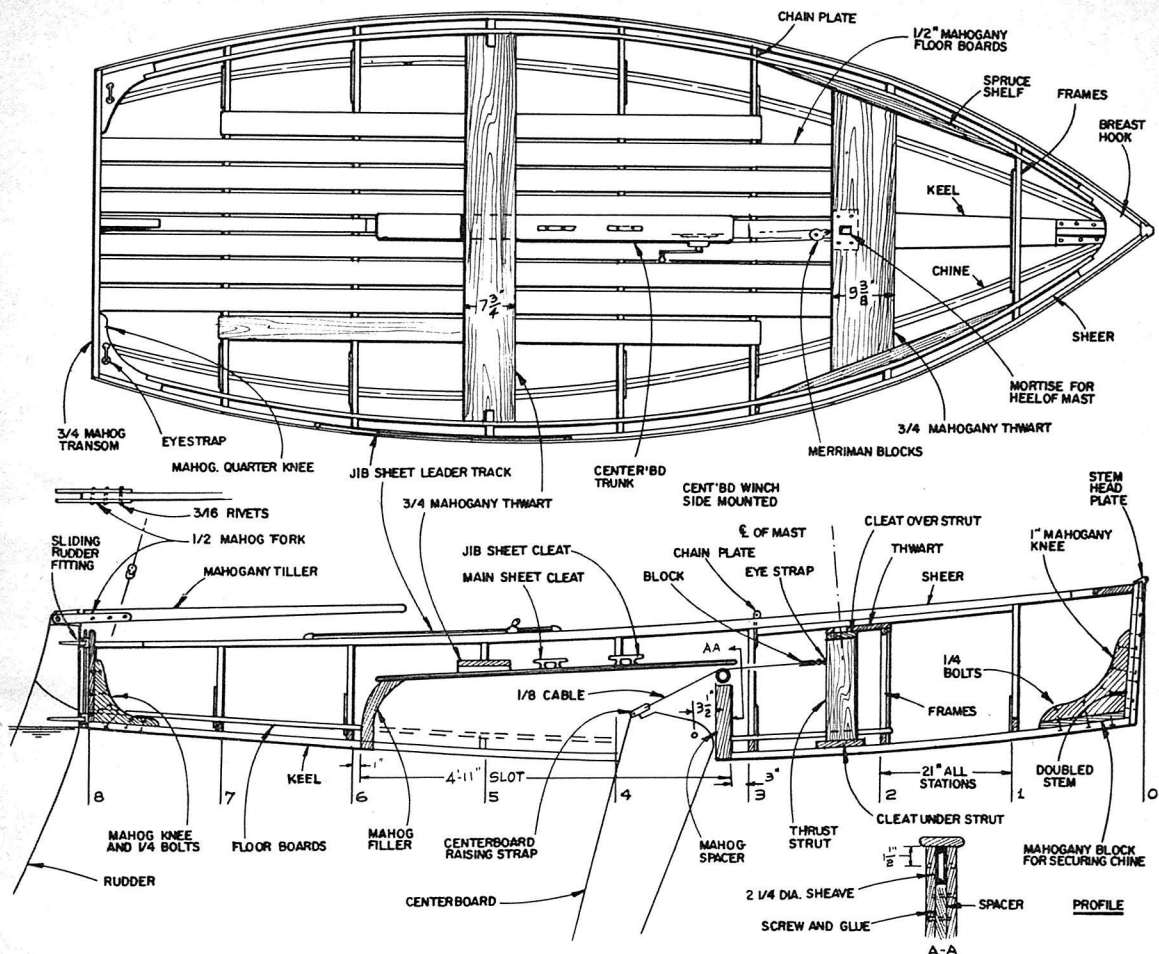
**HULL** ready for planking. Simplicity of the construction is boon to home builder.

patience. That's the time to sit down and think about it. A moment's rest will give you a fresh new viewpoint and help you build a better boat.

A few general rules should be observed during framing. Get a small supply of long garden lathing when you buy your lumber. They make good battens and straightedges to help you check your lines and bevels as you frame up. This, in turn, helps you get better glue joints, and all joints should be glued.

If you fasten with screws, don't countersink into plywood deeply. Just ream out enough of a countersink to bring the head of the screw down flush with the surface of





the plywood without dimpling or raising grain. Putty hides the evidence and gives you a smooth base for the finish—and screws hold better when not driven too deeply.

Mark and measure your side and bottom planking carefully before you begin to glue and screw it down finally. Borrow all the clamps you can lay hands on because they do help. Begin fastening in the middle of the boat, working outboard and fore and aft. There's quite a "tuck" or arc at the transom which rolls easily into position if you fasten the planking correctly.

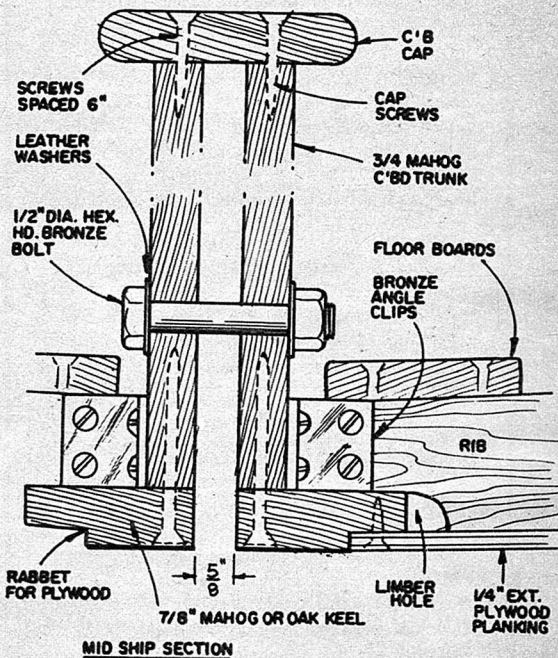
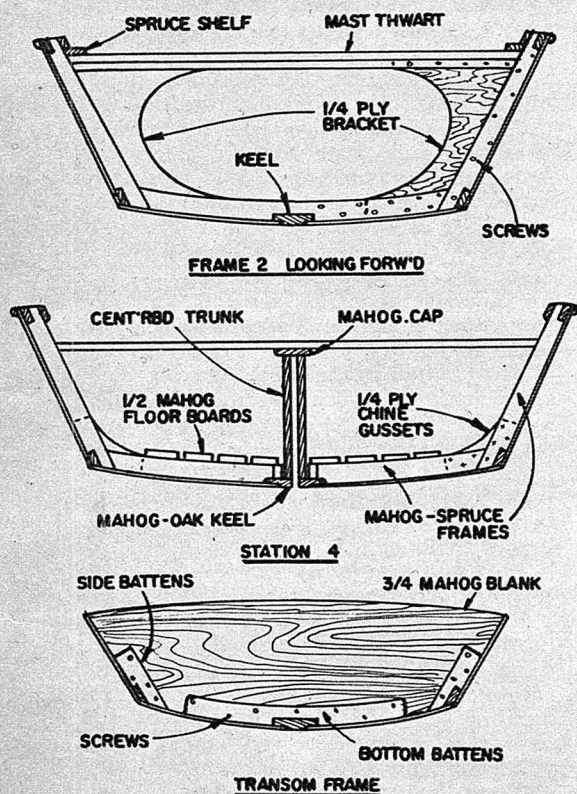
About the only departure you should make from standard practice shown in the plans is the addition of a  $\frac{3}{4}$ -in. square stringer which runs from Frame No. 1 all the way to a notch in the transom framing. This stiffens the bottom and prevents the plywood from rippling. A single stringer, located halfway between keel and chine

log, will be enough to do the job efficiently.

You have some latitude once the boat is cut from the strongback and turned over to finish the interior. Two variations have become standard practice. The first is a bridge installed along the centerline between Frames No. 2 and No. 3. This supports two double-thrust struts up to the mast thwart to spread compression from the mast to frames to keep keel seams from working under pressure.

Extend the centerboard cap to these double-thrust struts and fasten solidly between them. Use a piece of the centerboard trunk cap material as spacer blocks between the double struts and you get a good fit. Careful fitting of the shelves between Frames No. 1 and No. 3 is also essential since they spread strain over frames as well as brace the mast thwart. The shelves should be solidly fastened to the stringers installed inside the frames.

# THESE RIBS TYPIFY CONSTRUCTION



Many people like side seats, which are permitted. If you're of the "Let's go; it's only blowing 30 knots!" school of sailors, leave them out, but family sailors find seats one of the most attractive features of the Bantam. Seats are 50 inches long and center on Frame No. 5. Make them of cedar or other light wood, eight to nine inches wide, contoured to follow the sides.

Provided you don't exceed the tolerances shown in the offsets, you can cap the rails, a most worthwhile job since it protects the raw edge of plywood. Use thin lumber or 1/4-in. plywood for capping material. Also, you will probably find it desirable to use a wider rub rail than shown on the plans. It can be extended as much as an inch and a half which helps keep you a little drier in heavy weather as well as making a more comfortable place to sit.

Make a full size pattern of your centerboard and take it to a steel warehouse

where they will cut it to rough shape for you. The edges should be streamlined. Unfortunately, there's no easy way to do this job, although a portable grinder does make it a little easier.

Leverage on the centerboard is essential. A good winch can be made from a length of inch and a half thin wall electrical conduit with a large diameter wooden drum attached to one end. Cut holes in a pair of wooden blocks to take the conduit and line the holes with thin sheet copper or brass for a bearing surface. Attach the assembly to the front of the thrust struts under the mast thwart. The wire from the centerboard winds around the pipe as the rope hoisting portion winds around the wooden drum which can be up to nine inches in diameter.

Floorboards should be made of a light wood, such as cedar. One-half inch plywood is permitted, but adds weight which

## BILL OF MATERIALS

### MAHOGANY (54 bd. ft. as follows)

Clamp, c.b. trunk cap & edges, transom framing, etc.—9 bd. ft.  $\frac{3}{8}$ "

Transom, c.b. trunk logs, stem & stern knees, thwarts, sheer moldings, mast stanchion and cleat, etc.—25 bd. ft.  $\frac{3}{4}$ "

Keel, rudder, transom quarter knees—14 bd. ft.  $\frac{3}{8}$ "

Inner and outer stems, breast hook—6 bd. ft. 1"

### MARINE PLYWOOD

2 pieces or 128 sq. ft.  $\frac{1}{4}$ "x48"x192"

### SITKA SPRUCE (80 bd. ft. as follows)

Mast, floorboards—40 bd. ft.  $\frac{1}{2}$ "

Side & bottom frames, sheer stringers, shelves, boom—32 bd. ft.  $\frac{3}{4}$ "

### WESTERN RED CEDAR

Centerboard trunk sides—14 bd. ft.  $\frac{3}{4}$ "

### WHITE ASH

Tiller—1 bd. ft.  $\frac{7}{8}$ "

### FASTENINGS

Flat head wood screws

1 doz.  $\frac{3}{4}$ "x6 6 doz.  $1\frac{1}{2}$ "x10

50 doz.  $\frac{3}{4}$ "x8 2 doz.  $1\frac{3}{4}$ "x10

85 doz. 1"x8 3 doz. 2"x8

$\frac{1}{2}$  doz. 1"x10 7 doz. 2"x10

10 doz.  $1\frac{1}{4}$ "x8 1 doz.  $2\frac{1}{2}$ "x12

1 doz.  $1\frac{1}{4}$ "x10 4 doz.  $2\frac{1}{2}$ "x12

9 doz.  $1\frac{1}{2}$ "x8  $1\frac{1}{2}$  doz. 3"x10

Round head wood screws

5 doz.  $\frac{5}{8}$ "x6

1 doz.  $1\frac{1}{2}$ "x8

Flat head machine screws w. nuts and washers

1 doz.  $1\frac{1}{4}$ "x $\frac{1}{4}$ "

1 doz.  $1\frac{3}{4}$ "x $\frac{1}{4}$ "

Round head machine screws w. nuts and washers

$\frac{1}{2}$  doz.  $1\frac{1}{4}$ "x10

Hardware—per plans and to suit owner

Paint

5 qts. Spar Varnish—3 coats on spars, rudder, tiller, entire interior

5 pts. Undercoater—2 coats on topside

3 pts. Gloss—1 coat on topside

2 qts. Copper Bronze—3 coats on bottom

13 lbs. bedding compound

3 lbs. whitelead putty

Cordage

$7\frac{1}{2}$  ft. of  $\frac{1}{8}$ " 6x19 wire rope—centerbd. pennant mainsheet traveler

48 ft. of  $\frac{1}{8}$ " 1x19 wire rope—shrouds, jibstay

140 ft. of  $\frac{5}{16}$ " manila rope—sheets, halyards etc.

contributes very little to the sailing qualities of the boat. They should also be installed between Frames No. 1 and No. 2 to protect bottom planking. You often stand in this well while clocking and setting sail.

Follow standard practice in finishing your hull. Seal it thoroughly before you start putting screw heads and putting on paint or varnish. Many builders like a varnished interior, and it is handsome if you have used a mahogany-faced plywood. Gloss enamel outsides are popular, too. Fortunately, machine sanders and wet sandpaper make this arm-wearying job much easier.

Like building the hull, making good spars is a matter of preparation. The most necessary part is an absolutely flat bench on which measurement stations can be marked and which can be used for champing during gluing. One way to make a bench is of 2 by 6 backed up along a centerline with 2 by 2 in a T shape. Spike it heavily and frequently and check it carefully to make sure it is absolutely straight.

Good material is equally essential. It's hard to find clear, air-dried spruce for spars but anything less can spoil all your careful work. Ladder factories, specialized building supply houses, boat lumber suppliers are possible sources. The premium you'll probably pay will be worth it.

When it comes to rigging any sailboat, it's very easy to leave this world as far as costs are concerned. Fortunately, the Bantam requires very little in the way of fancy, store-bought fittings. Use good quality, however; cheap fittings are no economy.

The three wires in the standing rigging are  $\frac{1}{8}$ -in. aircraft cable fitted with aircraft fork or eye terminals. If you have no marine supplier nearby, you can probably have these made through your local airport. Have them made of 1 by 19 stainless steel. Tangs, where the shrouds attach at the mast, are made of heavy gauge stainless steel and bolts are a must here. Turn-

## LARGE SCALE BLUEPRINTS

for building this boat are available at \$10.00 per set. Please order from Mr. Leslie E. Bailey, Secretary, Rhodes Bantam Class Association, 4 Sunset Way, Binghamton, N. Y. Specify Plan FB-Bantam.



# Now! Build Your Own BOAT

## IT'S EASY AND FUN WITH ANY ONE OF THESE 20 PRE-TESTED, STEP-BY-STEP ENLARGED PLANS

Think how thrilled you'll be when your own boat takes her maiden plunge! You can build the "boat of your dreams" right now from any of 20 easy-to-read plans. Every model has *already* been built and thoroughly tested. Every boat is skilfully engineered for fast assembly, specially designed for ease of construction, safety, strength, and seaworthiness. Plans list all necessary materials. Offer below tells how you save money by ordering more plans.

**32. BUZZ.** 11-ft. car top outboard hydroplane designed for use with 5 to 10 hp motors. Seats 4 persons. \$1.50.

**175. EAGER EVE.** 18-ft. outboard cabin cruiser for racing and sports cruises. Carries four or sleeps two. Plywood construction with concealed motor in well. Top speed: 30 mph. Low in cost to build—fun to run. \$1.50.

**188. STAR-LITE.** 27½-ft. auxiliary cruiser has ample working galley, storage space and accommodations for four persons. Primarily a sailing ship, uses auxiliary engine not exceeding 100-cu. in. displacement. \$2.00.

**201. PLAYBOY** deluxe 14-ft. sports runabout. For extended trips; hauling water skiers, aquaplanes; fishing. Seats six. Weighs 300 lbs. Takes outboard 15-25 hp. \$1.50.

**210. SEA BABE.** 15-ft. sports cruiser has hull that practically eliminates power-wasting spray; hence, greater speed. Sleeps two persons for overnight cruising or seats four. Weighs only 450 lbs. \$1.50.

**221. PEDAL CAT.** Paddle-wheel driven catamaran which you can operate much the same as a bicycle. Will navigate in about 3½ in. of water. Ideal for use in protected waters. \$1.50.

**233. ACE.** 12-ft. outboard runabout. Takes 16 to 40 hp motors. Speeds up to 50 mph. Advanced hull design with plywood planking over frame. Excellent general family boat. \$1.50.

**239. SEA ROVER.** Ocean-going outboard cruiser can be built as a sports, utility or cabin model in either 15- or 17-ft. length. Safe and seaworthy. Seats up to seven. Takes 25-hp motor. Plywood construction. \$2.00.

**242. SPITFIRE.** 9-ft. Class B racing step hydro. Trussed keel design and stressed plywood planking produce an extremely strong, lightweight hull. \$1.50.

**255. MINIMAX.** 8-ft. speedy hydroplane for use on protected waters. Seats two. Convex bottom with hi-lift afterplane. Takes 3-15 hp outboard motors. Can be carried atop auto. Built of plywood. \$1.50.

**266. GLIDE-EASY.** 15-ft. combination plywood and fiberglass construction. Can be used as a double-ender-paddling canoe or with square stern, and powered by outboard motors up to 4 hp. Includes plans for outrigger and pontoon. \$1.50.

**267. SCAT CAT.** 8½-ft. 3-point racing hydroplane meets requirements of Class A and B racing rules. Can be built in fraction of time ordinarily required for such a craft. \$1.50.

**282. SEA HAWK.** 21-ft. cabin cruiser for overnight trips on protected waters or general sports use. Sleeps two adults and two children. Takes 60 hp outboard motor. Speeds to 32 mph. \$2.00.

**289. STINGAREE.** 14-ft. outboard runabout for water skiing, aqua-planing and general sports use on protected waters. Seats three. Speeds up to 36 mph with 35-hp motor. Monoplane bottom with lapped plywood, hi-lift after plane. \$1.50.

**300. HUNTING KAYAK.** 18-ft., two-place, flat-bottom kayak for hunting, fishing and general sports use on shallow, back waters. Plywood construction. \$1.50.

**304. HYDROFOIL BOAT.** 10-ft. willing mermaid with scow-type hull, flat bottom. Foils add speed, maneuverability; without them, boat can be used for sport and fishing use. Power is 10-40 hp outboard. \$1.50.

**306. GLASS BOTTOM BOAT.** 9½-ft. gadabout for exploring underwater marine growth, treasure hunting, or just plain fishing. Capacity is three to four adults. \$1.50.

**307. FIREBIRD.** Deluxe 14-ft. outboard stepped hydro runabout. Combines superlative performance with modern styling for general sports and pleasure use. Speeds up to 50 mph with 60 hp outboard. \$1.50.

**308. HASTY HYDRO.** 8-ft., one-man, 3-point hydroplane as simple to make as it's possible for a hydro to be. For general sports use. Lightning fast, safe to use. \$1.50.

**310. PLAYMATE.** 17½-ft. hard-top cabin cruiser for overnight trips and general sports use. Power is 35-50 hp outboard. Ideal family boat, two 6-ft. berths. \$2.00.

### SPECIAL OFFER

... save money!

When you order 2 or more plans, you may deduct 25¢ per plan from the price listed above. If your order is for 2 plans deduct 50¢; 3 plans 75¢; 4 plans \$1.00, etc. Satisfaction guaranteed.



3-Point Racer—No. 267—\$1.50



Cabin Cruiser—No. 282—\$2.00



Runabout—No. 289—\$1.50



Glass Bottom—No. 306—\$1.50

**SCIENCE AND MECHANICS, Dept. 270**  
450 East Ohio St., Chicago 11, Ill.

Enclosed is \$.....for which please send me the Boat Plans circled below:

These plans are \$1.50:	32	175	201	210	221
233	242	255	266	267	289
306	307	308			304

These plans are \$2.00: 188      239      282      310

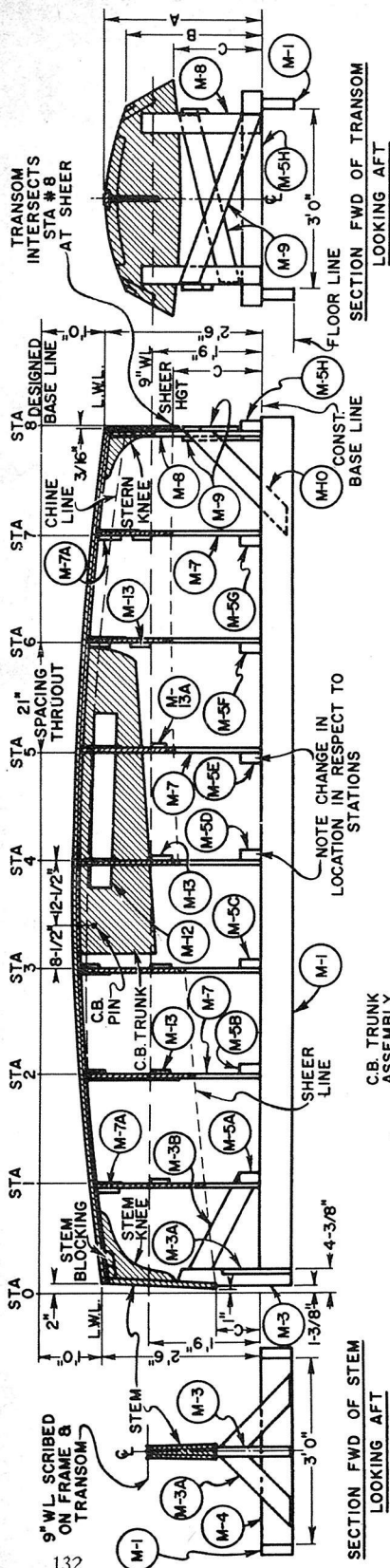
NAME .....

ADDRESS .....

CITY, ZONE .....

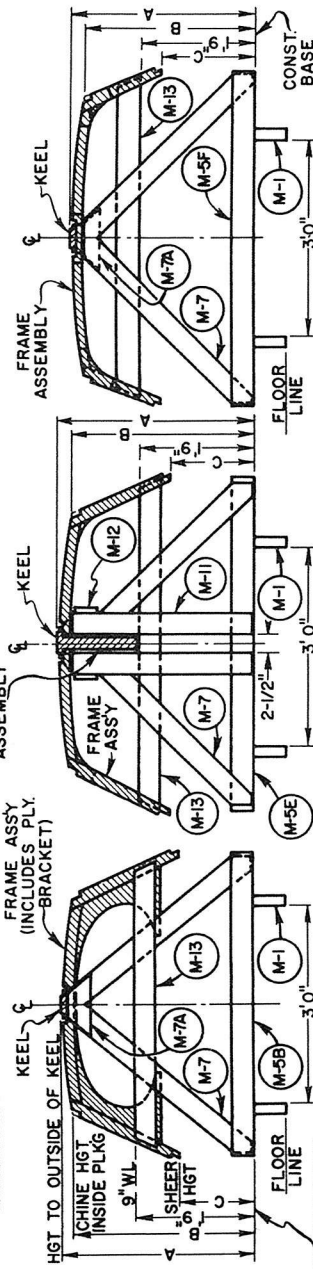
STATE .....

(Sorry, no C.O.D.'s or stamps. Satisfaction guaranteed or money refunded.)

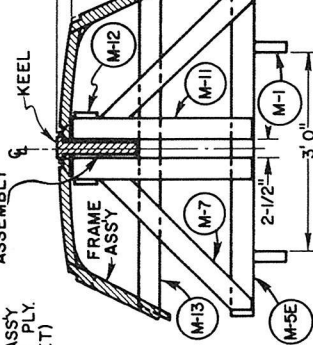


SECTION FWD OF STEM  
LOOKING AFT

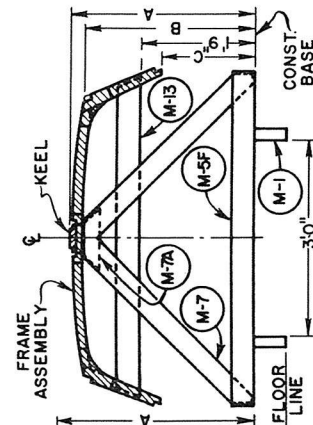
SECTION FWD OF TRANSOM  
LOOKING AFT



SECTION AFT FRAME #2  
LOOKING FWD



SECTION FWD FRAME #4  
LOOKING AFT  
TYPICAL OF FRAME #5 ALSO



SECTION AFT STATION #6  
LOOKING FWD

PART #	NAME	SIZE	QTY
M-1	BED TIMBERS (NOTE 2)	2X6" X 14'0"	2
M-3	STEM SUPPORT	1/2X3" X 1'9"	1
M-3A	"	"	"
M-3B	"	"	"
M-4	SLEEPER AT STEM	2X4" X 3'6"	1
M-5A	SLEEPER STA 1	2X4" X 3'6"	1
M-5B	"	2X4" X 4'0"	1
M-5C	"	2X4" X 4'9"	1
M-5D	"	2X4" X 5'2"	1
M-5E	"	2X4" X 5'4"	1
M-5F	"	2X4" X 5'2"	1
M-5G	"	2X4" X 4'8"	1
M-5H	"	2X4" X 3'6"	1
M-7	FRAME SUPPORTS	3/4X4" X 3'6"	14
M-7A	"	7/8X4" X 1'0"	7
M-8	TRANSOM SUPPORTS	7/8X4" X 2'0"	2
M-9	"	7/8X4" X 3'0"	2
M-10	"	7/8X4" X 2'4"	2
M-11	KEEL SUPPORTS	7/8X4" X 2'9"	4
M-12	LONGITUDINAL SUPPORTS	7/8X4" X 3'0"	2
M-13	CROSS SPALLS	7/8X4" X 6'0"	6
M-13A	CROSS SPALLS TO SUIT	7/8X3" X 6'0"	1
M-13B	CROSS SPALLS TO SUIT	7/8X3" X 6'0"	1
M-13C	STOCK FOR ADDED BRACING	7/8X4" X 1'0"	30

IMPORTANT  
ERECT FRAMES 4 & 5, BRACE SECURELY & WORK TOWARD ENDS  
CHECK OFFSETS WITH OFFICIAL PLANS BEFORE PLANKING

HEIGHTS ABOVE BASE LINE	STA	STEM	1	2	3	4	5	6	7	TRANS
A	2-5-0	2-8-5	2-10-3	2-11-3	2-11-4	2-10-7	2-9-6	2-7-8	2-6-0	
B	2-5-6	2-7-4	2-9-0	2-9-4	2-9-2	2-8-2	2-6-6	2-4-5	2-2-0	
C	0-7-8	0-10-4	1-0-4	1-2-1	1-3-3	1-4-3	1-4-8	1-5-2	1-4-8	

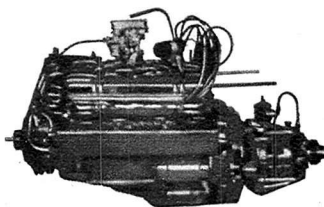
OFFSETS ARE MEASURED IN FEET, INCHES & EIGHTHS OF INCHES  
MEASUREMENT "A" IS TO OUTSIDE OF KEEL  
"B" IS TO OUTSIDE OF CHINE LOG & INSIDE PLK'G  
"C" IS ACTUAL SHEER HEIGHT

NOTES  
1- FOR CLARITY LONGITUDINAL DIAGONAL BRACING OF PARTS M-7, M-11 ETC NOT SHOWN, THIS BRACING IS NECESSARY BUT CAN BE LEFT TO BUILDERS DISCRETION.  
2- PART # M-1 SPECIFIED 14' LONG, HOWEVER IF THIS STOCK IS UNAVAILABLE IN THIS LENGTH, SHORTER PIECES MAY BE UTILIZED BY USING 2X6" X 2 BUT BLOCKS ACROSS THE JOINTS TO MAKE THE REQUIRED LENGTH.

**MORE FOR YOUR Money...**

**"Best Buys" For You!**

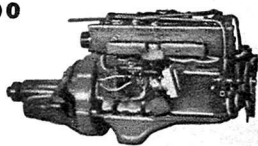
## Low Cost STOKES Converted Inboard Marine Engines



### 190 HP BUICK V-8—Only \$695.00

Brand new V-8 Buick engines, fully marine converted for fresh or salt water use. Finest conversion parts: all new carburetor, fuel pump, starter, generator, electrical system, full length water jackets, reverse gear of your choice—Priced from **\$695.00**

### 126 HP WASP 6- An outstanding value—Brand new Wasp engine blocks—all top quality conversion components. For salt or fresh water. Complete with reverse gear —ready to install—Only **\$525.00**



### 61 HP WILLYS JEEP 4

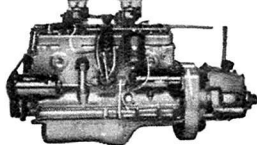
Rebuilt: \$425.00, New: \$575.00

100 HP Ford V-8 .....\$475.00

275 HP Packard V-8 Clipper ...\$920.00

145 HP Chevy or Plymouth V-8 ..\$675.00

235 HP Chrysler V-8 .....\$825.00



### 170 HP HUDSON HORNET 6

Left—Another powerful, proven American Motors engine, marine converted by Stokes. New blocks, all new salt water resisting marine components. Reverse gear included. **\$625.00** Complete, only:

Before you buy any inboard marine engine, be sure to check STOKES low prices and big selection of popular conversions—such as Studebaker Lark, Champion and V-8, Olds 88, Dodge, Pontiac, Ford 6, etc.

# SAVE

Stokes offers big selection of economical Conversion KITS . . . for many makes of motors. All Kits are complete—nothing else to buy! Also—used and rebuilt engines, gas and diesel, many makes and sizes, 2 to 550 HP. Stock list sent free with Catalog. SAVE too on many marine fittings, reverse gears, paints, hardware, supplies and equipment of all kinds. Send for Catalog today!

**STOKES Marine Supply Co., Coldwater, Michigan**

**Send for FREE Catalog Now!**

STOKES MARINE SUPPLY CO.  
Dept. K-61, Coldwater, Michigan—U.S.A.

Please send me your New 1961 FREE CATALOG and complete information on all available motors.

NAME: .....

ADDRESS: .....

CITY: .....STATE:.....

buckles are needed for the two side shrouds.

While not a must, halyards of  $\frac{1}{16}$ -in. wire are a big help since they won't stretch. You can make a simple halyard lock from sheet stainless steel. Cut a length about  $1\frac{1}{2}$  in. long, then bend over a  $\frac{1}{4}$ -in. lip. Cut a slot in the lip just wide enough for the wire and mount it on the mast. Either a swaged ball fitting or a Nicopress sleeve will lock through the slot. Use light cotton line for the hauling portion.

Sails should be made by a professional sailmaker. It's a wise economy to pay the small difference in cost to get synthetics, such as dacron. Besides giving you a faster sail, it will hold its shape better, last longer and be less affected by the weather.

When the proud day comes to launch your Bantam for her first sail, trim it with the mast straight up and down while you and your crew are in your normal sailing position. Leave the shrouds a little slack. Out on the water, you'll find she sails best with your weight in the middle or slightly forward when going into the wind. Before the wind, move aft a little.

There are many fleets of Bantams active

in Florida, the Midwest and in the Northeast. Individual boats are located from South Africa and Sweden to Hong Kong. In many fleets, Bantams are raced by families, man-and-wife, father-and-daughter and father-and-son teams. In others, the boat is used for Junior training, since it has so many big boat features, including a spinnaker, and because it has proved stable and easy to handle.

Whenever it is sailed, you'll hear people praise the Bantam. It gives the beginning sailor stability plus big boat features. It's a comfortable boat for beginning sailors and day sailors alike. For the more advanced sailor, its planing performance and ability to carry a spinnaker is a real challenge.

All construction questions and information about measurement certificates will be answered by the Chief Measurer, William D. Doncoes, 3027 Morin Point, Erie, Michigan. Secretary of the class is Leslie E. Bailey, 4 Sunset Way, Binghamton, New York.

*Editor's Note: Bantam Fiberglass shells may soon be available for home finishing. If interested, contact Secretary Bailey. •*



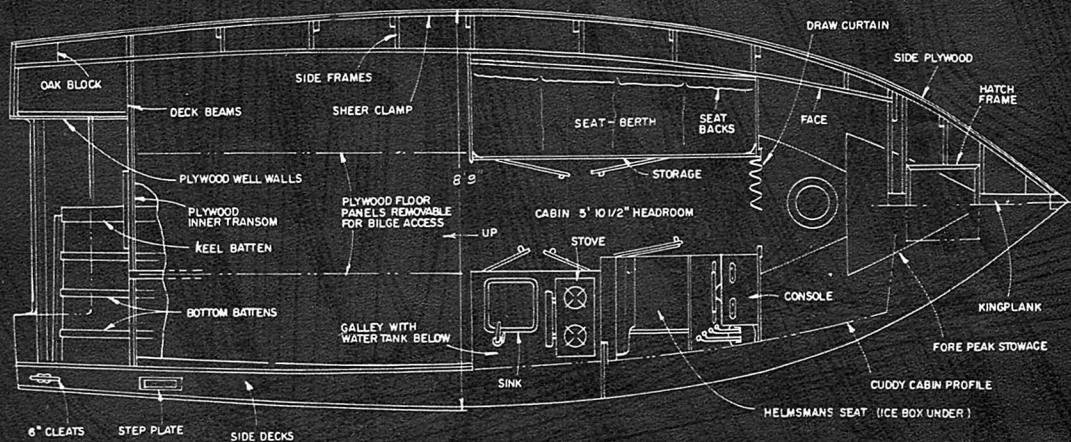
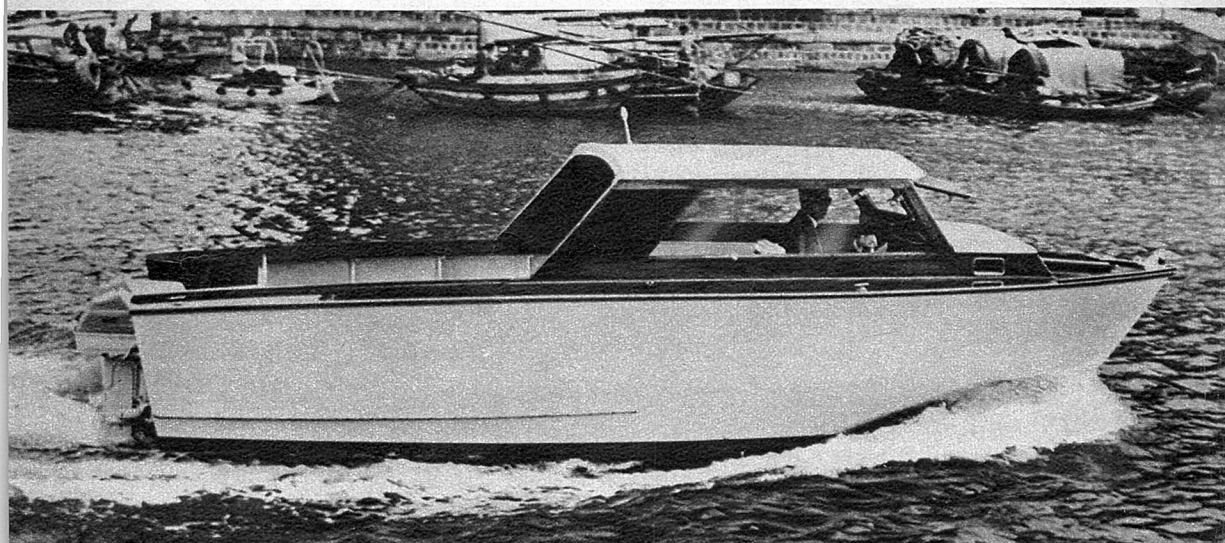
# How To BUILD 20 BOATS

## WANDERER

By D. H. Smith

This 23-footer is an experienced world traveler.

PASSING junks in Hong Kong harbor, Wanderer shows her compact styling and grace.





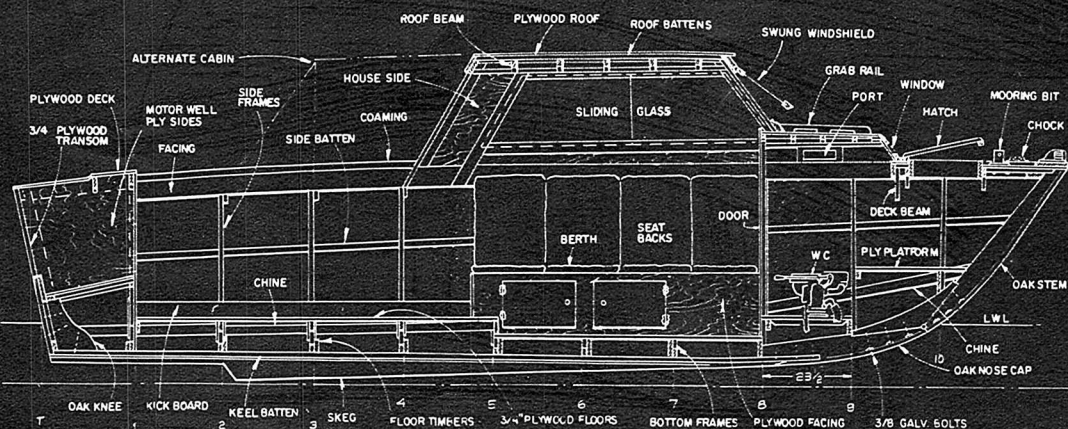
WITH INCREASED outboard engine horsepowers, it has been practical within recent years to operate some fairly large cruisers and other types of craft with this form of 2-cycle power. Wanderer is a big beamy craft which certainly represents the larger classification of outboard cruising boats. Because of her size and design characteristics, several cabin arrangements are possible within her spacious hull. Within reason, her performance will not be appreciably affected by certain optional interior arrangements as they will not cause significant differences in loading characteristics. She possesses a fairly deep-V entrance and a good clean run of her aft body lines which will give her a good turn of speed with a minimum of pounding. Recommended horsepower is two 35 or 40 horsepower outboard engines in either long or standard shaft versions, depending on the transom height chosen. Wanderer's stability is excellent due to her considerable beam and ample deadrise. With a generous flare in her topsides, she will be a dry boat when running in choppy seas.

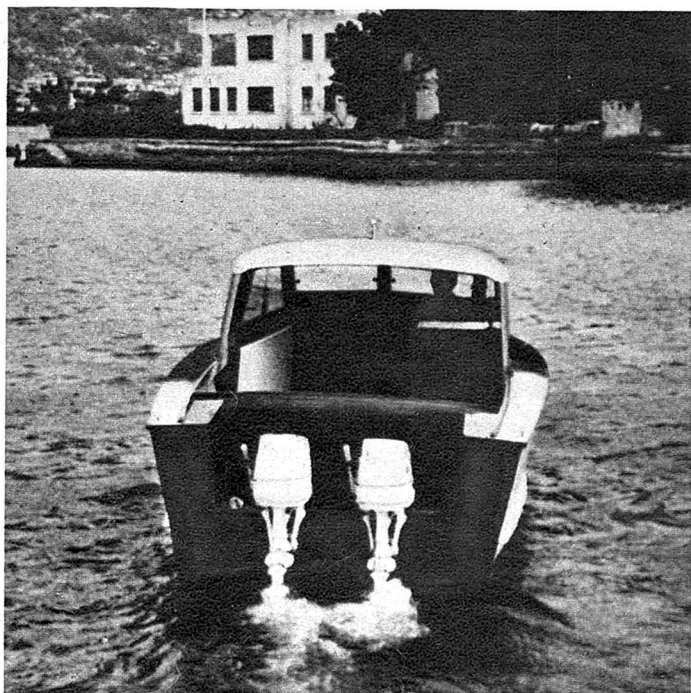
The plans show two alternate arrangements relating to interior layout but which also affect the general appearance of this craft. In both arrangements, the hull shapes are identical, with the forward cabin and position of the helm retained. This is necessary in order to keep the same hull balance and to enhance construction simplicity. In either case, the interiors af-

ford a sheltered helm, private toilet room, galley, and comfortable sleeping accommodations for two persons. The forward steering position has some noteworthy advantages in that the helmsman's forward view is excellent and unobstructed and there is good balance with the engine weight aft. A decided advantage in cockpit space is gained with the plan featuring a short cabin length and no aft bulkhead. By using the upper berth arrangement shown for this plan, sleeping space can be obtained for four persons in its alternate long-cabin plan. Thus it can be seen that a considerable degree of flexibility is offered by the two interior layouts. There are absolutely no reasons why additional arrangements cannot be made so long as the builder remembers not to alter the basic hull, forward cabin, or steering station location. The latter may, of course, be placed to either port or starboard as the two recommended layouts demonstrate.

As for the construction of Wanderer, she is built almost entirely of plywood over suitable hardwood frames. The hull surfaces have been conically developed to minimize bending stresses in the planking material. The construction is especially well suited to the amateur or home boat builder as there are no complicated forms or intricate shapes involved and certainly no steam bending will be required.

As the first step in construction, it is impossible to repeat too often the necessity of full-size line development. Once this has





DUAL engine arrangement provides maximum safety and dependability, affords extra maneuverability.

## **GLENWOOD** UNCONDITIONALLY GUARANTEED . . .

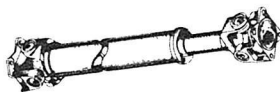
**Finest Quality, Most Durable Marine Equipment & Hardware**



HI-SPEED  
WATER PICKUP



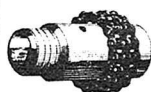
METZGER  
THROTTLE



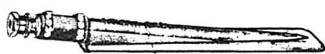
CUSTOM TORQUE TUBE ASSEMBLIES



GARBOARD  
DRAIN PLUG



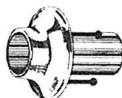
CHAIN COUPLING



ANGLE SHAFT LOGS



CUSTOM  
SPEED STRUT



CUSTOM  
EXHAUST PORTS



CUSTOM EXHAUST MANIFOLDS

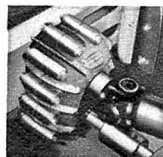
### **FREE . . .**

GLENWOOD CATALOG with prices and illustrations of everything for your boat in quality marine equipment and hardware. Send for your copy today and the name of your local GLENWOOD dealer.

Custom designed Glenwood marine equipment is the finest in quality and durability — the leader in efficiency. This is backed by an unconditional guarantee to promptly replace — at no charge — any faulty equipment due to casting defects or workmanship. All chrome hardware is genuine cast bronze, triple-plated in copper, nickel, chrome. All stress equipment is cast of high tensile manganese bronze.

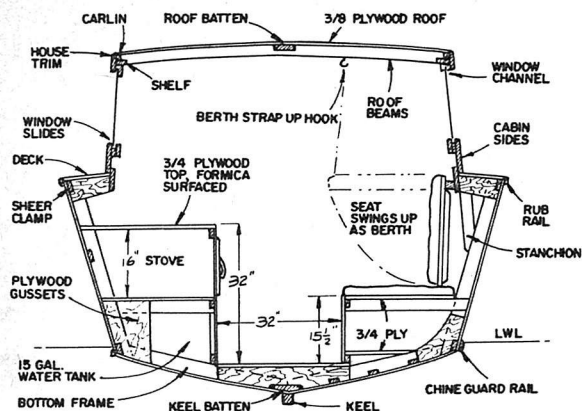
For the most efficient, longest lasting marine equipment...demand GLENWOOD.

**GLENWOOD MARINE EQUIPMENT**  
1627 W El Segundo Blvd. Gardena, Calif.

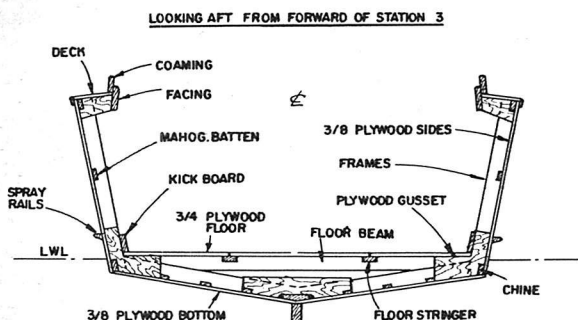


Glenwood has Standard, Hi-Torque and In and Out V-Drives plus complete V-Drive assemblies.

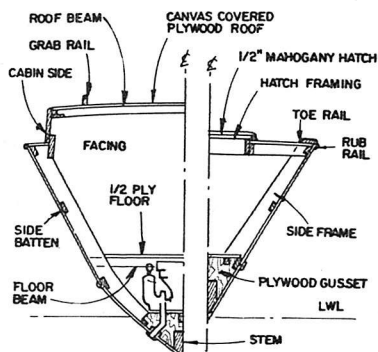
*Distributor of Jabsco Pumps, Stewart-Warner Instruments, and B. J. Bearings*



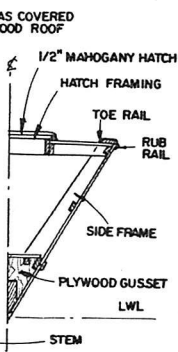
LOOKING AFT FORWARD OF STATION 6



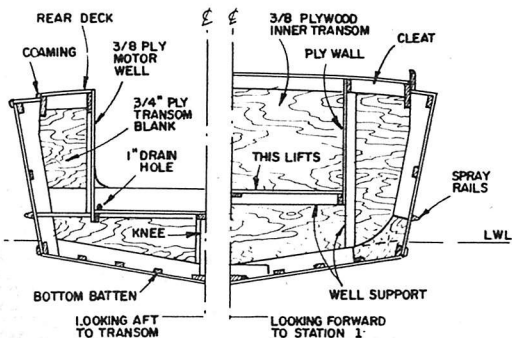
LOOKING AFT FROM FORWARD OF STATION 3



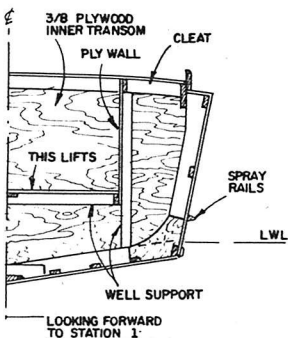
LOOKING FORWARD TO STATION 9



LOOKING FORWARD TO STATION 10



LOOKING AFT TO TRANSOM



LOOKING FORWARD TO STATION 1

# SAILS

AND

## SAILBOAT FITTINGS

RACE-LITE STAINLESS STEEL HARDWARE  
TUPHBLOX AND W & C FITTINGS



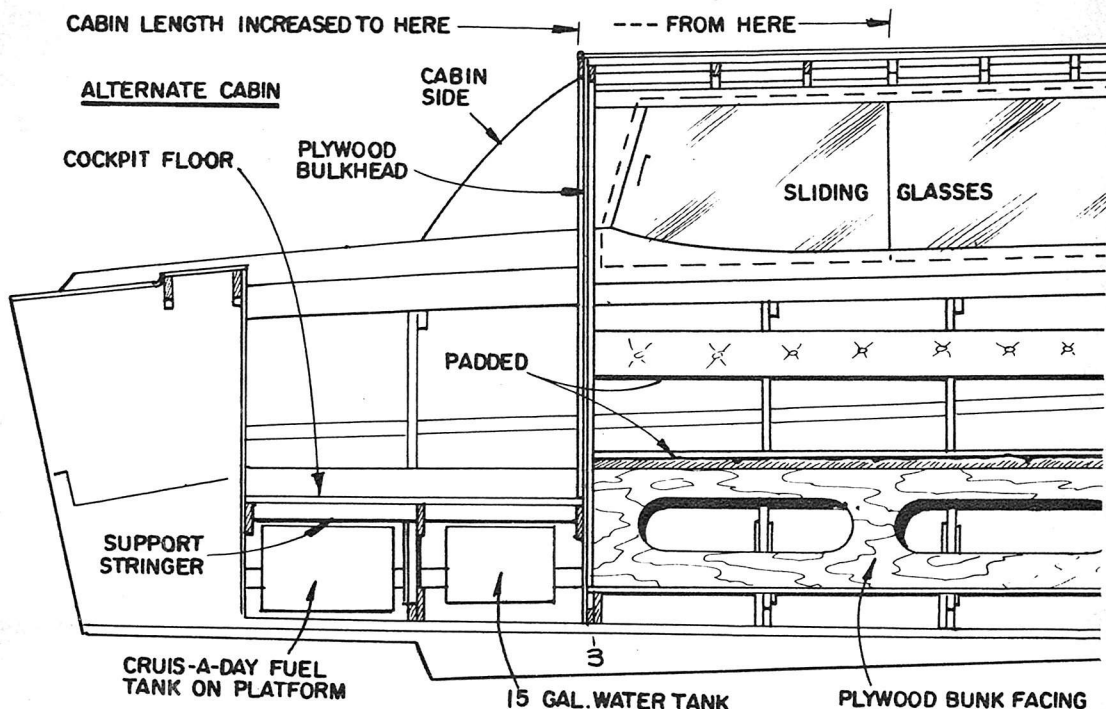
### Sails For All Sailing Craft and All Sailing Surfboards & Planing Sailboats Masts & Spars For Sailing Surfboards **OUTBOARD, POWER BOAT SUPPLIES**

Below is just a few of the many items we can supply you. Mooring Equipment, Bow Rails, Stoves, Steering Wheels, Steering Kits, Rope & Aluminum Ladders, Searchlights, Power Boat Lights, Electric Sirens, Fog Horns, Bilge Pumps, Compasses, Speedometers, etc. MARINER'S LIBRARY—Over ninety books about boats.

Aluminum masts, Spars, Spruce Spinnaker & Whisker Poles and fittings. Linen-Dacron-Nylon-Samson Yacht Braid & Manila Ropes. Stainless Steel Wire Rope & Accessories. Spliced to your specifications.

Camp & Waterfront Equipment. Fiberglass, Resins, Canvas, Wing Dope. Fitted Bunk Cushions, Sail Covers, Boat Covers, Curtains, etc. Lightweight Nylon Waterproofed Utility Covers 16¢ sq. ft. Building a boat? See Us First.

**ALAN-CLARKE CO.**  
*Sailmakers-Boat Supplies*  
BE-3-5908 75 CHAMBERS ST. N.Y.C.  
SEND FOR CATALOG A.A. 60



**PLANS — PATTERNS — FRAMES**  
7 to 42 ft.

Plans, \$1.00 & Up      Choice & Variety

**OUTBOARD — INBOARD**  
280 Powerboat Plans — 40 Sailboat Plans

Powerboat Plan Catalogs (3) \$1.00  
Powerboat Cpte. Kit Catalog .35  
Sailboat Plan Catalog .25

Trailers    Trailer Kits & Assemblies  
Auto Conversion Kits  
Marine Hardware — Sail & Power  
Boats      Reasonably Priced



**Marinecraft**  
BOX 161-T  
BRIGHTON, MASS.

**SKIPPERS AHoy!**

YOU CAN'T AFFORD TO MISS  
THE BIG SPRING ISSUE OF

**TRUE**  
THE BOAT & MARINE

**BOATING**  
MAGAZINE

50¢ AT YOUR LOCAL NEWSSTAND  
On sale January 12

Sailing    Houseboating  
Speedboating    New Equipment  
PLUS: Power Plants for '61  
Sunken Treasure for Everyone  
Great Yachts of the World  
Tips on Water Skiing

To order direct send 50¢ plus 10¢ for mailing to  
TRUE BOATING MAGAZINE, Fawcett Publications,  
Inc., Greenwich, Conn.



PLYWOOD BULKHEAD

SAME AS  
OTHER HULL  
FORWARD  
OF HERE

FIXED  
GLASS

CONTROL

GEARSHIFT  
CABLES

PLYWOOD CABINET

VENTS

PLYWOOD FLOOR

been done and a body plan is laid out upon a suitable lofting floor, frame assembly can begin. By simply laying the wood members over the body plan, they may be marked and cut to proper size and then glued up in addition to being fastened as shown. The hull is, of course, built upside down and the resulting frames may be set up on and secured to a building jig or base, at intervals corresponding to the designed station spacing. The reader is referred to any of the standard texts for detailed boatbuilding instructions.

Once the frames are positioned and shored into place, the keelson can be fastened to them, followed by the assembly of the keel and stem. The chines, battens, and clamps must then be sprung into place about the framework and let into appropriate notches as indicated on the plans. With the frame assembly completed, all faying surfaces must be beveled and shaped to receive the plywood plank surfaces. This must be done in order that the plywood will lie flat and bear against all framing in such a manner as to prevent any rupturing of the outer plies.

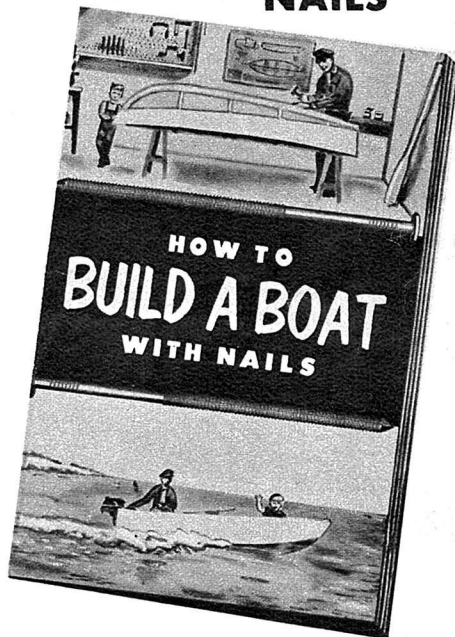
Upon completion of the craft's hull, it may be painted and turned upright to permit the start of interior joinery work. •



# DO WHAT THE EXPERTS DO

Build your boat with  
**STRONGHOLD® or ANCHORFAST®**

ANNULAR THREAD **NAILS**



GET THIS  
VALUABLE BOOK **FREE**

You'll build any boat easier, faster, better—save time and money—with STRONGHOLD or ANCHORFAST Annular Thread Nails! They drive easily—save pre-drilling. Scientifically engineered threads "lock" with the wood fibres—nails stay tight! Specified by leading designers, used by leading builders. This book tells how. Write us for your copy, and samples of STRONGHOLD and ANCHORFAST Nails. Both sent free. Just ask for "Boat Book BB-160."

*"Drives Like A Nail... Holds Like A Screw."*  
**INDEPENDENT NAIL**  
AND PACKING COMPANY

Pioneer Developer and Largest Maker of Threaded Nails  
**BRIDGEWATER, MASSACHUSETTS**

© Copyright I.N. & P. Co., 1959. Trade Marks Reg. U.S. Pat. Off.



## BOAT TRAILER KIT

Only \$69<sup>50</sup>

800 POUND CAPACITY  
—FOR BOATS TO 15  
FT. OTHER MODELS

AVAILABLE FOR  
BOATS UP  
TO 2000  
POUNDS!

SEPARATE

### TRAILER PARTS OUR SPECIALTY!

If you need a boat trailer, you can't afford not to get one of these rugged, perfectly engineered Kits. Enjoy assembling and using your own boat trailer for a fraction of what you'd expect to pay! All parts are guaranteed to be made of the highest quality materials, ready to assemble to a few pieces of locally purchased pipe.

CAMPING AND UTILITY TRAILER KITS ALSO  
AVAILABLE AT TREMENDOUS SAVINGS!

Write today for new 1961 illustrated catalog showing all sizes, models and prices. Please enclose 10¢ to cover postage and handling.

### TRAILER PRODUCTS CO., INC.

Dept. F-1

P. O. Box 176

Kingsport, Tenn.



# FREE

*Charlie M.*

# BOAT TALKS

- A. Painting the Boat.
- B. Fiberglassing Deck and Cabin tops.
- C. Fiberglassing the Center Board well.
- D. The Brightwork Finish.
- E. The Repair of the Broken Spar.

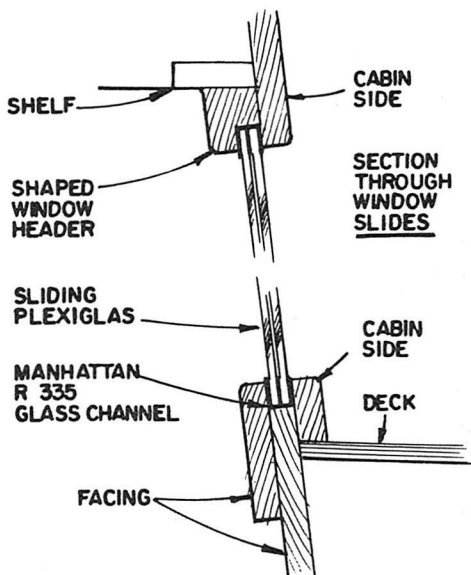


# FREE GUIDEBOOK

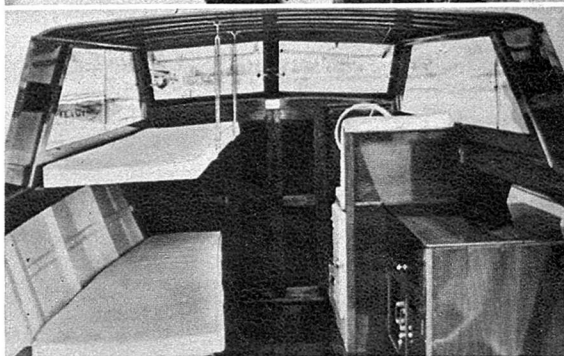
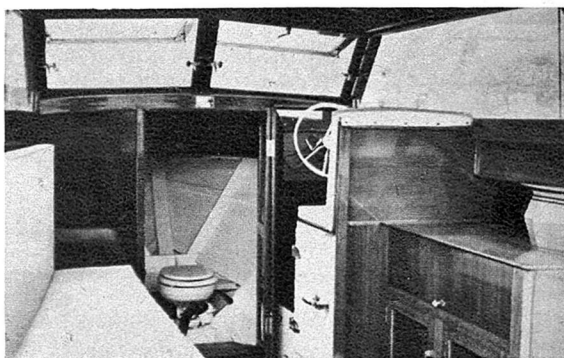
Write

## GLASS PLASTICS CORP.

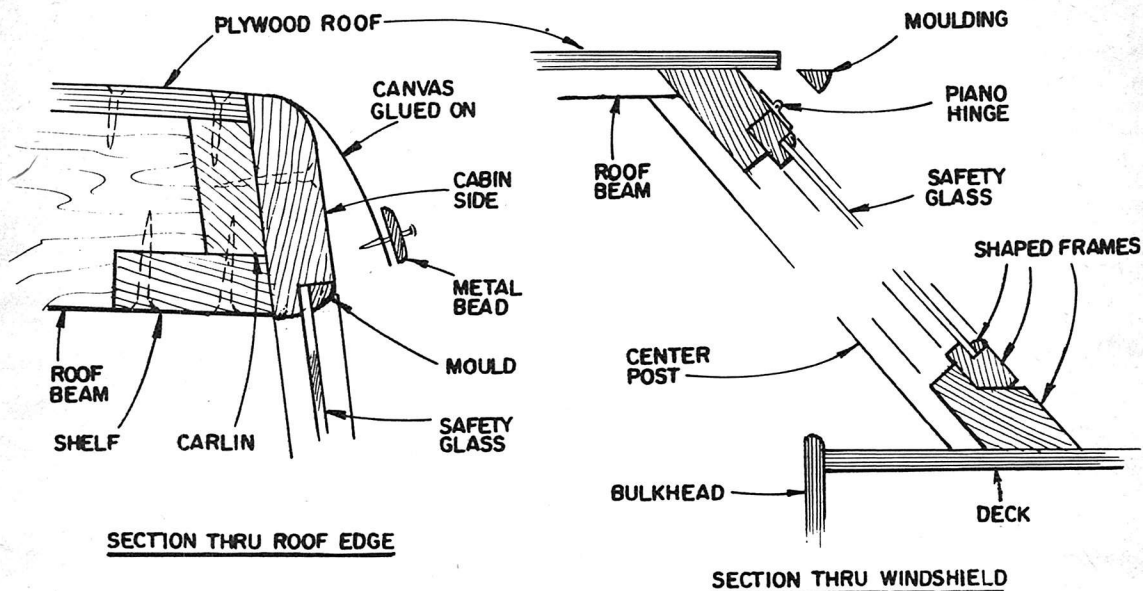
1605 West Elizabeth Avenue, Linden, New Jersey



CUDDY cabin and head, with port side berths converted to settee. Galley, right.



BERTHS on port side ready for sleeping. Headroom in the main cabin is 5 ft. 10 in.



# Lehman **ECON-O-POWER**<sup>®</sup> MARINE CONVERSIONS

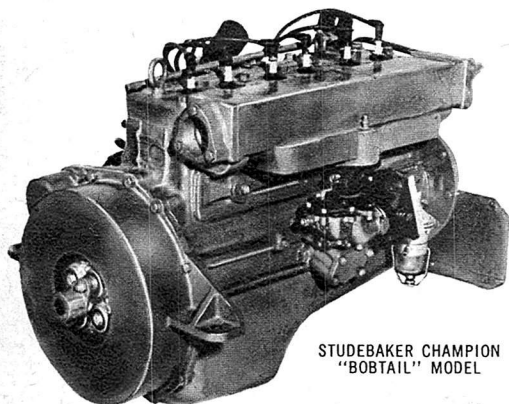
for FORD • MERCURY • EDSSEL • LINCOLN • JEEP • CHEVROLET V8  
AND NOW FOR 6 CYL.  
STUDEBAKER CHAMPION!

A most complete line of marine conversions from 40 to 400 h.p. Sold and serviced throughout the U. S. by authorized ECON-O-POWER dealers. Simple to install—a set of wrenches is the only tool you need. Many exclusive ECON-O-POWER features.

ECON-O-POWER conversions are available for FORD, EDSSEL, MERCURY and LINCOLN engines dating back to 1928, CHEVROLET V8's, 4 and 6 cylinder FORD DIESELS, 4 cylinder WILLYS JEEP, and now for the flashy, 90 h.p. 6 cylinder STUDEBAKER CHAMPION engine.

Manufactured and guaranteed by LEHMAN—the first and oldest name in marine conversions, 800 E. Elizabeth Ave., Linden 7, New Jersey.

**NEW, 44-Page CATALOG**  
Mail Coupon Now!



STUDEBAKER CHAMPION  
"BOBTAIL" MODEL

LEHMAN MANUFACTURING CO.  
800 E. Elizabeth Ave., Linden 7, N. J.

I enclose 25 cents. Please send your new 44-page ECON-O-POWER Conversion catalog. (Please print)

Name .....  
Address .....  
City ..... State .....

# BOAT LUMBER

*For Fine Boat Building  
and Repairs*

**SITKA SPRUCE MAST  
& SPAR GRADE**

**PHILIPPINE MAHOGANY**

**HONDURAS MAHOGANY**

**WESTERN RED CEDAR**

**WHITE CEDAR**

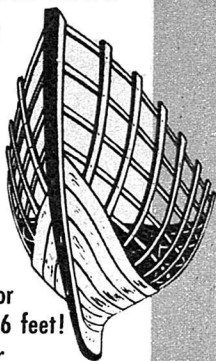
**OAK · TEAK · CYPRESS**

**LONG LEAF YELLOW**

**PINE · ETC.**

**Fir and Mahogany Plywood for  
marine use—lengths up to 16 feet!**

*Ripping and planning to order  
in our fully equipped yard.*



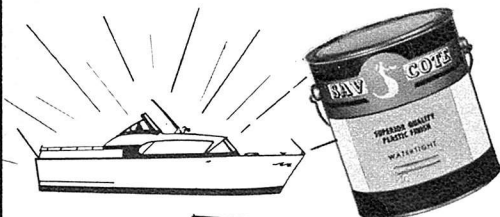
We are specialists in all types and sizes of imported and domestic boat lumbers. We ship anywhere—at surprisingly low prices. Send 10¢ today for valuable manual "How to Select the Right Boat Lumber" plus complete lumber and price list.

**M. L. CONDON CO.**

**Boat Lumber Specialists Since 1912**

246 Ferris Avenue, White Plains, N. Y. • White Plains 6-4111

## A Gleaming, Waterproof New Finish—EASY!—with



**SAV-COTE the NEW LIQUID PLASTIC  
... DRIES WATERTIGHT IN 15 MINS.**

No Scraping, Sanding or Special Caulking.

Apply Sav-Cote over all surfaces, old or new, wood, metal, Fiberglass or canvass.

**DIRECT FACTORY  
PRICES**

Reg. \$25 gal., only  
\$17.50 gal.  
Quart only \$4.95, P.P.

**TOUGH—YET STRETCHES 100%!** Give your boat this gleaming, drop-tight protective coating—without special preparation of any kind! Just brush on new Sav-Cote, the famous liquid vinyl plastic that's been proved on thousands of boats everywhere. End yearly painting. No sanding, no scraping, no primer, no special caulking.

Doesn't crack, peel or chip in 250° heat or Arctic cold. Order in Glistering Plasticlear and brilliant white, green, gray, blue, red, black. Send check or money order.

**Write for free literature and color chart.**

**SAV-COTE CHEMICAL LABS, INC.**

P. O. BOX 2128-FA, ALEXANDRIA, VA.

## BILL OF MATERIALS

### MAHOGANY OR WHITE OAK

Keelson—1 piece  $1\frac{1}{8}$ "x6"x17'

Frames—#2-#8,  $\frac{7}{8}$ "x3"x115'

#1 and sides of transom frames,  
 $\frac{7}{8}$ "x6"x14'

#10,  $\frac{7}{8}$ "x5"x8'

#9,  $\frac{7}{8}$ "x10"x10'

Chines—1 piece  $1\frac{1}{8}$ "x2 $\frac{1}{2}$ "x44'

Battens— $\frac{3}{4}$ "x1 $\frac{1}{2}$ "x144'

Sheer clamp—1 piece  $\frac{3}{4}$ "x2 $\frac{1}{2}$ "x50'

Deck beams— $\frac{7}{8}$ "x5"x45'

King plank—1 piece  $\frac{7}{8}$ "x6"x2'

### MAHOGANY

Hatch framing—for facing,  $1\frac{1}{2}$ "x4"x7'  
for main longitudinal members,  $\frac{3}{4}$ "x3"x4'

Face piece— $\frac{7}{8}$ "x5" (8" molded to allow for shaping) x40'

Facing— $\frac{3}{4}$ "x8"x18'

Chine rail— $\frac{5}{8}$ "x1 $\frac{1}{2}$ "x44'

## LARGE SCALE BLUEPRINTS

which will simplify construction are available at \$20.00 per set. Both cabin arrangements are shown. Send orders to Donald H. Smith, 484 Everett St., Crystal Lake, Ill. Specify Plan FB-WANDERER.



**THIS WANDERER** was built in Hong Kong, has outboard cruising comfort, convenience.



Sheer rub rail—1"x1¼"x50'  
 Spray strip—1"x1¾"x20'  
 Roof batten—¾"x4"x10'  
 Cabin front—¾"x12"x5'

#### MARINE PLYWOOD

Planking—¾" in following amounts

2 panels, 4'x12'  
 4 panels, 4'x14'  
 2 panels, 4'x7'

Decking—¾"

1 panel, 4'x10'  
 1 panel, 4'x18'

Motor well sides, bottom—¾"

1 panel, 3'x6'  
 1 panel, 2'x5'

Transoms—inner, ¾"x4'x8'  
 outer, ¾"x4'x8'

Bulkheads—¾" or ½" as shown, in panels to suit

Berth tops, cabinet sides etc.—¾" random panel sizes

Floors—¾" depending on cabin option, see plans.

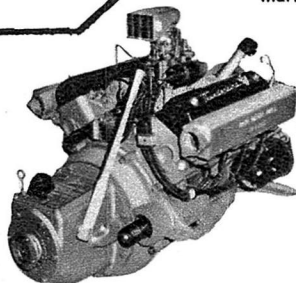
Cabin roofing—¾"  
 2 panels, 4'x10' (for larger cabin plan)  
 Cabin sides—¾" mahogany marine plywood or sided mahogany stock (¾") built up as shown  
 Cabin windshield framing—as per plans

#### FIR OR MAHOGANY STOCK

Berth, cabinet, bulkhead and seat framing—¾" to suit in random lengths  
 Floor beams, stringers—depending on cabin option, ¾" sided with molded dimensions (or use oak)  
 Roof beams—63' of ¾"x5"  
 Carlins, shelves—¾"x5"x20"

#### MISCELLANEOUS

Stem—4"x6"x11' white oak or Douglas fir  
 Keel—1½"x6"x17' white oak or Douglas fir  
 Motor well framing—¾"x2"x16" fir  
 Roof header—1½" sided oak, molded as shown



High speed, low cost performance "Thunderbird" with Barr Conversion.

FOR **SPEED...**

... **DEPENDABILITY**

PLUS **ECONOMY**

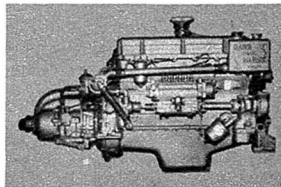
CHOOSE  
A

**BARR MARINE CONVERSION**

Why pay hundreds of dollars more for an engine with a "marine name"? Get a complete, bolt-on Barr conversion kit and make your own marine engine. Only Barr has complete, quality-engineered conversion kits for all popular American auto engines—from 4-cyl. "Jeep" to Cadillac V-8.

WRITE FOR FREE CATALOG AND CONVERSION HINTS MANUAL

NEW LOW-COST MARINE DIESELS  
—4 and 6 CYL.



Famous Ford Diesels complete including reverse and reduction gears and closed cooling system



**MARINE PRODUCTS COMPANY**

2709 E. Castor Ave. • Phila. 34, Pa.

# how to get best results

## leak - proofing . . .



**STAY-TITE NEOPRENE ALLSEAL** is resilient rubber in liquid form. Prevents leaks—stops leaks. Squeeze bottle with flip-top cap flows this neoprene rubber into places caulking compound cannot penetrate. Works on wet or dry wood. Not affected by water, oil, gas or sunlight. Is not sticky or messy to use, yet develops wood-to-wood adhesive strength of 243 pounds. Sands without sticking to the paper. White and mahogany colors. 6 oz. plastic squeeze bottle, \$1.50, pint (16 oz.) \$2.95, qt. (32 oz.) \$5.75 postpaid.

## bedding & caulking . . .



**BUTYL CAULKING COMPOUND** is "rubber in putty form." Applies easily with a putty knife or caulking gun. Guaranteed to stay pliable and work with the wood to maintain a watertight seal. Recommended for use in hull and deck seams, all bedding needs including the fitting of plank, setting of keels and chines, double plank work, lapstrake construction, glazing of windows and bedding of ports, and setting of transoms. Has strong adhesion to wood, fiberglass and steel. Used around the home, permanently seals against leaks around sinks, bathtubs and shower stalls. White color. Pint \$2.45, qt. \$4.75 postpaid.

## gluing and bonding . . .



**STAY-TITE MARINE ADHESIVE** for bonding boat building woods and exterior structural wood applications subject to prolonged weather exposure in a temperature service range of -40°F to 300°F. Doesn't brittle out or deteriorate. Ready-to-use, allows up to 60 min. open work time. Bonds plywood with adhesive strength of 675 pounds per sq. in.; vinyl fabrics to steel; rubber molding to wood, fiberglass or steel; aluminum to aluminum. Natural wood color. Pt. \$2.85, qt. \$5.50 postpaid.

## waterproofing fabrics . . .

**NOTHING SO EASILY WATER-PROOFS** fabrics as the revolutionary new Stay-Tite Rubbercote. It dries clear to form a very flexible rubber coat that sheds water and dirt. Rubbercote not only strengthens the material and improves its appearance, but adds tremendous serviceability to the fabric. Pint, spray bottle for points of exposure of hunting clothes, etc., \$1.95. Brush consistency for heavy duty boat-covers, tents, convertible car tops, etc. qts. \$5.75, gal \$19.50 postpaid.



## repairing . . .



**STAY-TITE F-A-S PATCHER** is the outstanding compound for permanent patching of fiberglass, aluminum, steel and wood. No mixing. Can be machined, tooled, sanded, and won't shrink. Sets like steel in about 6 hours, yet shows flexibility under extreme stresses. Use to repair holes, gouges, cracks. 1/2 pt. \$2.00. Pint \$3.95.

## bilge cleaning . . .



**AFTER YOUR BOAT IS LAUNCHED**, keep her clean-smelling and safe with Stay-Tite Instant Bilgeclean. It is self-acting and immediately after application, begins to emulsify gas, oil, grease and scum with the bilge water making it easy to pump out without scrubbing or scraping. Non-inflammable and harmless to paint, economical Stay-Tite Instant Bilgeclean comes in a handy plastic bottle, pt. \$1.35, qt. \$1.98 postpaid.

**STAY-TITE PRODUCTS CO., INC.**  
Waterproof Products of Merit for Over 50 Years  
Cleveland 4, Ohio

## If your dealer can't supply you.....USE THIS COUPON!

**STAY-TITE PRODUCTS CO., INC.**  
Dept. HTB-61, Cleveland 4, Ohio

Please rush the items checked below. I enclose \$.....

- |   |  |
|---|--|
| <input type="checkbox"/> BUTYL CAULKING COMPOUND<br>"Rubber in putty form" Qt. \$4.50                         | <input type="checkbox"/> CANVAS TIGHTENER & FILLER<br>Puts strength into canvas Qt. \$2.75   |
| <input type="checkbox"/> NEOPRENE ALL-SEAL<br>"Rubber in liquid form" Pt. (16 oz.) \$2.95                     | <input type="checkbox"/> MARINE ADHESIVE<br>Bonds most everything Qt. \$5.50                 |
| <input type="checkbox"/> RUBBERCOTE<br>Sprayin' Rubber Pint Spray Bottle \$1.95                               | <input type="checkbox"/> INSTANT FIBERCLEAN<br>Spray cleans grease, oil, scum Pt. \$1.50     |
| <input type="checkbox"/> XXX CEMENT<br>Rubber in Glue Form...Qt. \$2.75                                       | <input type="checkbox"/> RUSTGO<br>Works miracles on chrome, all metals Pt. \$ .80           |
| <input type="checkbox"/> INSTANT BILGE CLEAN<br>Self-acting emulsifier of bilge oil and grease.....Pt. \$1.35 | <input type="checkbox"/> WOOD CRACK FILLER<br>Water-mix patcher for wood 2 lb. \$ .90        |
| <input type="checkbox"/> F-A-S PATCHER<br>No-mix patcher for fiberglass, aluminum and steel...1/2 Pt. \$2.00  | <input type="checkbox"/> MARINE CAULKING COMPOUND<br>Known for Quality since 1908 Qt. \$2.60 |
|   | <input type="checkbox"/> WINDSHIELD CLEANER<br>Anti-static for Plexiglass. Pt. \$1.50        |

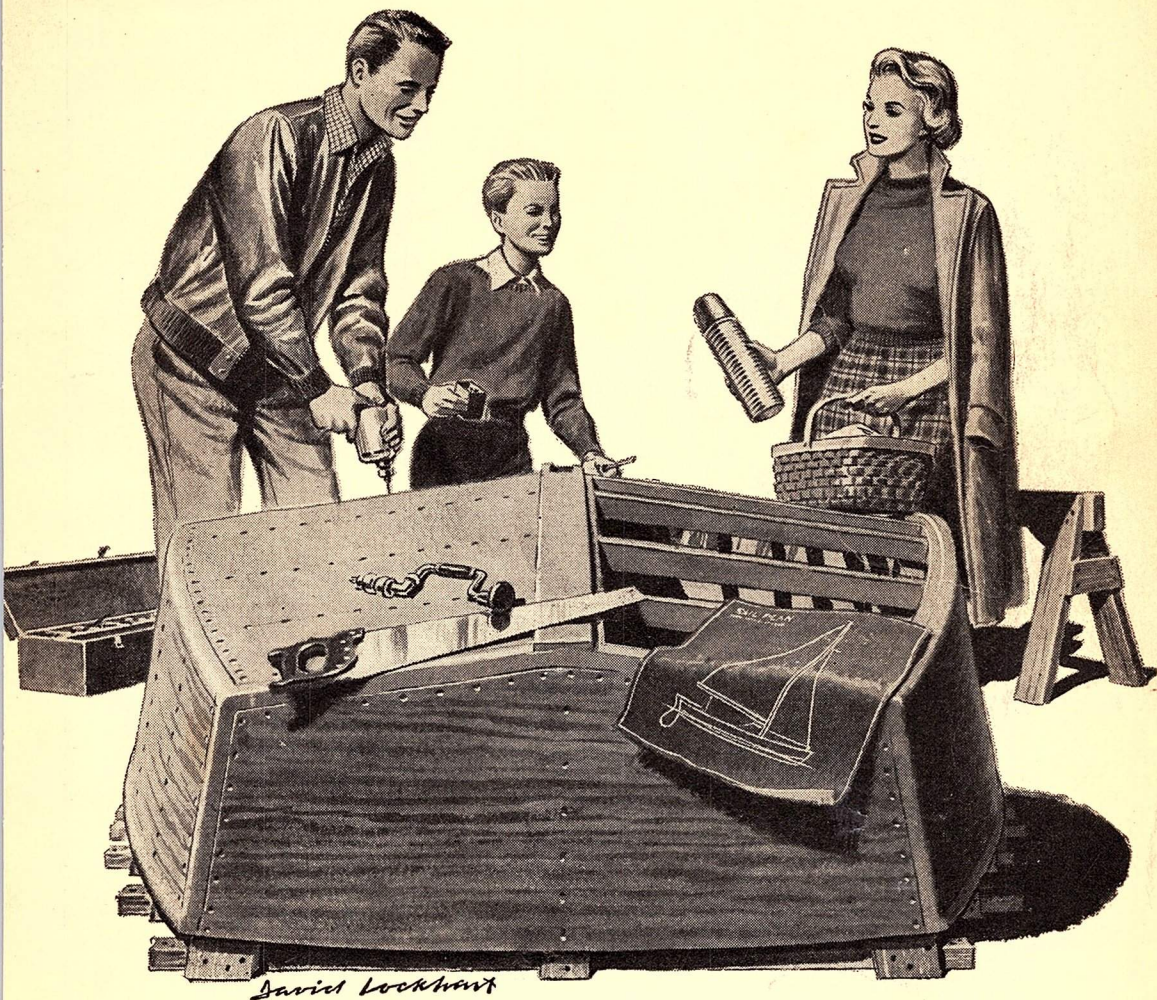
Name .....

Address .....

City .....Zone.....State.....



# HAVE YOUR OWN BACKYARD BOATYARD



**Be your own boatbuilder! Thousands of craftsmen have built boats from MECHANIX ILLUSTRATED plans. So can you! MI plans are detailed, step-by-step, easy to follow.**

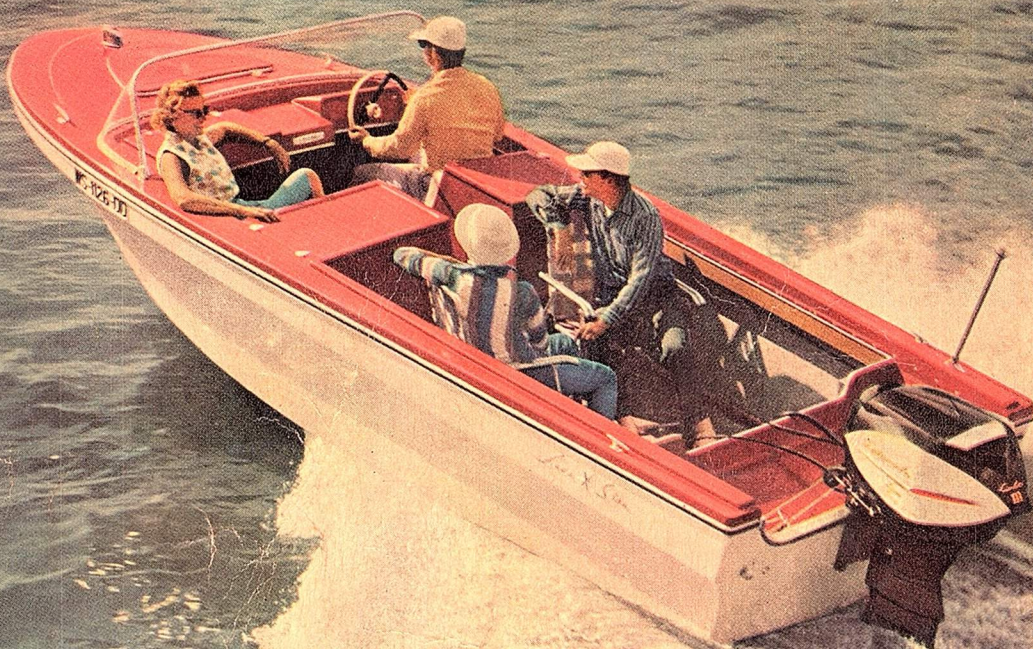
**Included in MI's selection of 70 special large-scale plans are rowboats, dinghies, canoes, kayaks, outboards, inboards, hydroplanes, cabin cruisers, sailboats, catamarans, houseboats and skiffs.\* Every issue of MI carries how-to projects, articles, tips and new-product news especially for the boating enthusiast.**

**Still Only 25¢!**

## **MECHANIX ILLUSTRATED**

\*For a catalog listing all plans send 10¢ to: MI Plans Service, Fawcett Building, Greenwich, Conn.





## *if it's quieter than an EVINRUDE —it isn't running!*

This is the way boating was meant to be . . . quiet, peaceful, serene. No vibrant motor whine to shatter the spell or make you shout above it. Relax at full throttle as you send the spray flying with speed to spare . . . *as quietly as if we'd bottled the sound and sealed it.* Actually, we did just that . . . and more . . . in the '61 Evinrudes!

In addition to cushioned, sound-sealed power and sound-blotting insulation under the hood, we've worked a quiet miracle with the cover itself. Every curve, every contour is designed to stop vibration and stifle noise.

Performance? You can show your transom to any boat on the water . . . without making noise about it!

Quietly . . . Evinrude's new Starflite III gives you the velvet wallop of 75 V-4 hp.

Quietly . . . you get the high-speed efficiency of Jetstream Drive. You get today's most advanced, most efficient fixed-jet carburetion . . . linked, for the first time, with fixed-temperature control. Automatic choke means instant starts. Revolutionary battery-saving Uni-Charger charges while your motor idles.

You'll find the same quiet power in the 40 hp Lark III and other Evinrudes from 3 to 75 hp. Try one, and you'll boat happily . . . and quietly . . . ever after. See your Evinrude dealer (he's listed in the Yellow Pages under "Outboard Motors").

Free catalog—write: Evinrude Motors, 4056 N. 27th Street, Milwaukee 16, Wis.

(In Canada: Peterborough, Ont.) A Division of Outboard Marine Corporation.



**EVINRUDE**  
FIRST IN OUTBOARDS